DOCUMENT RESUME

ED 163 969	IR 006 635

AUTHOR	Auster, Ethel; Lawton, Stephen B.
TITLE	Educational Information System for Ontario. Final Report, March 1977-April 1978.
INSTITUTION	Ontario Inst. for Studies in Education, Toronto.
SPONS AGENCY	Ontario Dept. of Education, Toronto.
PUB DATE	78
NOTE	223p.; For related documents, see IR 006 633-635
EDRS PRICE	MF-$0.83 HC-$11.37 Plus Postage.
DESCRIPTORS	*Educational Resources; *Evaluation Methods; Information Dissemination; Information Networks; *Information Systems; Models; On Line Systems; Questionnaires; Records (Forms); Search Strategies; Systems Approach; Tables (Data); *Trend Analysis; *User Satisfaction (Information); Use Studies
IDENTIFIERS	*Education Information System for Ontario; *Question Negotiation

ABSTRACT

This final report describing the operation and research of the EISO project, which provides online bibliographic search services to educators of Ontario, briefly summarizes the first and second interim reports. In addition, it discusses users and the uses of EISO information by providing mini-case studies to illustrate quantitative data and identifying factors contributing to use or non-use of search results. The monthly and yearly satisfaction levels of users who did and did not utilize the services of intermediaries--Educational Information Consultants--are also explored. The negotiation process between user and intermediary is analyzed and a preliminary model of the process is developed. A systems evaluation of user satisfaction employing sociological and process variables is also included. Recent trends and developments in online searching are reviewed to illustrate how these trends and EISO's own research and experience have resulted in the project's operation. Appendices include user evaluation questionnaires, EISO order forms, and publicity brochures. (Author/MBR)

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EDUCATIONAL INFORMATION SYSTEM FOR ONTARIO

Final Report

March 1977 - April 1978

Ethel Auster
Stephen B. Lawton

The Ontario Institute for Studies in Education

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

THIS RESEARCH PROJECT FUNDED UNDER CONTRACT
BY THE MINISTRY OF EDUCATION, ONTARIO
Toronto 1978

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ABSTRACT

This volume is the third and final report describing the operation and research of the Educational Information System for Ontario project funded by the Ontario Ministry of Education in March 1975 to provide online bibliographic search services to the educators of this province.

This report begins by briefly summarizing the first and second Interim Reports that described the scope of the research, the conceptual framework, data collection techniques, the implementation of the service, and preliminary evaluation results. It then devotes a chapter to the users and the uses of EISO information providing mini-case studies to flesh out the quantitative data and identifying factors contributing to the use or non-use of search results. Chapter 3 presents monthly and yearly satisfaction averages of EISO users and compares satisfaction levels of users who did and did not go through intermediaries or Educational Information Consultants. The negotiation process between the user and the search analyst in analyzed in Chapter 4 and a preliminary model of the process developed. Chapter 5 presents a systems evaluation of user satisfaction employing sociological and process variables. The concluding chapter reviews recent trends and developments in online searching and shows how these and the findings of our own research and experience have resulted in the operation of EISO as it is carried on in 1978.

ACKNOWLEDGEMENTS

Long term projects demand extraordinary dedication and perseverance from their staffs. The Education Information System for Ontario project was especially fortunate that its team members responded so willingly to the many different and changing demands made of them over the past three years. First, and foremost, the Principal Investigators would like to thank Ruth von Fuchs, Search Analyst, for continuing to provide the highest standard of service to growing numbers of EISO users. We also express our appreciation to Ann Yeung, Library Assistant, for performing the many supportive tasks with a willingness and expertise that we have come to take for granted. The help of David To and Paul King, Graduate Assistants, who helped collect the data for Chapters 4 and 5 of this report, is also sincerely appreciated.

Once again we are pleased to acknowledge the cooperation and support given the project by units of The Ontario Institute for Studies in Education and personnel of the Ministry of Education for the Province of Ontario. The undiminished interest and commitment of the Educational Information Consultants enables EISO to continue to effect educational development in the Northeastern Region of this province. The growing numbers of new and repeat users all over Ontario who used EISO provided, of course, the prime ingredient for ensuring the success of the project.

Finally, we would like to thank Margaret McCabe for typing this report.

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CHAPTER 1

INTRODUCTION

This volume is the third and final report of the Educational Information System for Ontario, a research contract funded in March 1975 by the Ministry of Education of the Province of Ontario. Though much of the research component of the project is now completed the service aspect of EISO continues to provide Ontario educators with online bibliographic retrieval of references in education and the social sciences and with access to original documents.

Background

EISO was funded to develop, evaluate, and analyze an information dissemination system based upon computerized retrieval of bibliographies. It differed from the usual research contract in that it was not only to provide a rigorous research study firmly grounded in theoretical concepts, but it was also to have a largely developmental component in the implementation of a search service available to educators on a fee-paying basis. Thus, not only were normal aspects of contract research such as research design, data collection and analysis required, but also some more unusual activities. Among these were the creation of a business system, publicity materials, promotional workshops, and a program to train Educational Information Consultants who were to act as information intermediaries or linkage agents in geographically remote areas. Professional development activities, seminars, and demonstrations added still other aspects to the study. The aspect of the contract that was most readily apparent to educators and the one that still continues was, however, the actual creation of a fully operational information service offering an interactive online bibliographic search service to the educators of Ontario by providing them access to existing data bases such as the Ontario Educational Research Information System (ONTERIS), ERIC, *Psychological Abstracts*, *Exceptional Child Education Abstracts*, *Social Sciences Citation Index*, *Dissertation Abstracts International* and other data bases relevant to educators.

The EISO Service

To use the EISO search service, the educator submits his information request to the search analyst, a specially trained reference librarian, who develops a search strategy that is machine-readable. Bibliographies are printed offline by a major commercial supplier like Lockheed or System Development Corporation and mailed to the user who may then order original documents in either microfiche or paper copy formats. A fee based on the amount of professional and computer-connect time used is charged for the search and a flat rate for duplicates of original items.

Interim Reports

The *First Interim Report* (Auster and Lawton, 1976) covered the period March 1975 to February 1976. Divided into eleven chapters, it recounted the creation of EISO, both its service and research components. It reviewed the literature on information centres, intermediaries, and change in education, described the problems encountered in introducing a new service into an established organizational environment, outlined the initial training program for the Educational Information Consultants, and outlined the design and operation of the business system that EISO was to follow. That *First Interim Report* also presented the research design that was used to monitor and evaluate EISO's operation and the satisfaction of its users. A systems model using sociological, psychological, and economic variables within an adoption of innovations framework was developed and preliminary data collection instruments were designed. Last, some early tentative research findings were presented.

EISO's *Second Interim Report* (Lawton and Auster, 1977) consisted of seven chapters covering the period March 1976 to February 1977. With the research design completed and the operation of the service well under way, the second year's report focused on the clients of EISO: their geographical location, employing organizations, personal characteristics, and most important, their levels of satisfaction with EISO. Reliability of scales and items used to collect data concerning user satisfaction was detailed as were the trends, social correlates, and intervening variables of user satisfaction. Mini-case studies showed the impact that EISO had on the director, coordinator, principal, and teacher of a school board. In addition, the economics of operating EISO were considered, other data base search services in Canada were identified, and alternative organizational structures for EISO in the future were posed. Both the first and second reports included extensive appendices of all data collection instruments and forms used in the research as well as the service aspects of the contract.

Final Report

This third and final report presents cumulative satisfaction data collected over a three-year period. It also delves into the uses of information obtained through EISO and examines the negotiation process between the search analyst and the user when a request is placed. A picture of EISO as it exists in mid-1978 concludes the volume. Appendices illustrate new business and monitoring forms developed that reflect the transition and changed emphasis from research project to service provision.

CHAPTER 2

THE USER AND THE USES OF EISO INFORMATION

The growing importance of the provision of information by automated means has been reflected in the increasing number of articles and studies devoted to online reference services. The focus of much of this work centres around developing accurate costing techniques (Cooper and De Wath, 1977) and describing and evaluating specific services (Firschein and Summit, 1977, and Lancaster, 1969). The users of these services have received little attention with the notable exception of Wanger's recent survey (1976). Generally, however, concern for the user and the way in which he uses the information he receives has been of greater concern to educational researchers and sociologists than information specialists (Hood, 1978, and Rittenhouse, 1971). This concentration is understandable. Information managers, librarians, and search analysts can rarely influence the use of the information they provide to the user: local exigencies, administrator commitment, financial constraints, the political climate may all impinge on the ultimate use of retrieval information. Ironically, however, it is the effective use and impact of the search results that may determine whether or not a user perceives the service to be useful and becomes a satisfied client who returns to the search service to place further requests. And it is upon the building up of such a repeat-user clientele that the survival of a search service may depend.

The purposes of this chapter, therefore, are to identify EISO users over the past three years, present their reasons for seeking information, provide mini-case studies of how the information they received impacted upon their local situations, and identify factors that contributed to the use or non-use of information received.

User Characteristics

The conceptual framework and method for collecting data on EISO users were described in the *First Interim Report*: March 1975-February 1976 (Auster and Lawton, 1976) and the *Second Interim Report*: March 1976-February 1977 (Lawton and Auster, 1977). Briefly, the user was viewed within an adoption of innovation model using sociological, psychological, and economic perspectives. Each user was sent a User Evaluation Questionnaire (Appendix A) six weeks after placing a search. Additional data were collected by the search analyst on a Search Request Form (Appendix B), and on an EISO Service Evaluation Data Sheet (Appendix C). Finally, a sample of users was interviewed using an Interview Schedule (Appendix D). It will be noted that data for second-year searches presented below now include 371 returned evaluation questionnaires covering the period April 1, 1976 to March 31, 1977. Third year data cover the period April 1, 1977 to December 31, 1977.

Location

As in the past two years, the majority of EISO's most recent users come from the Metropolitan Toronto area, providing the mainstay of the service (Table 1). The fact that this high figure has remained fairly stable is all the more interesting because some professional libraries in local school boards have recently purchased their own terminals and are now offering their own search services. This leads one to suspect that the actual number of users from the greater Toronto area may be going up but that this increase is being partially obscured and absorbed by other available services.

The increased number of users from the Ottawa area (1.9% to 7.8%) may reflect the fact that several workshops and seminars were given to governmental officials and at summer courses held there thus raising awareness of the service and acting as a stimulant for usage.

TABLE 1

LOCATION OF USER'S ORGANIZATION

Location	Percent		
	Year 1 (n = 386)	Year 2 (n = 371)	Year 3 (n = 129)
District	14.8	6.7	4.7
County or Regional Government	23.3	25.3	27.9
Metropolitan Toronto	49.5	55.8	53.5
Ottawa	1.0	1.9	7.8
London	4.9	1.3	0.0
Hamilton	0.5	1.3	0.0
Windsor	2.6	2.2	1.6
Sudbury	1.3	3.2	0.0
Canada (not Ontario)	1.0	0.8	3.9
Not Canada	1.0	1.3	0.8

The rise of the number of users from provinces other than Ontario (.8% to 3.9%) may reflect EISO's new policy of processing all requests received regardless of their geographical origin.

Personal Characteristics

The age, sex, education, and professional activities of EISO users have remained stable over the three years the service has been in operation. Two-thirds of the users continue to be male (Table 2), and over three-quarters of all users are between 26 and 45 years of age (Table 3). Most users have occupied their present position for less than two years (Table 4). Over one-half (Table 5) are officers of a professional organization, have participated in an educational research project in the past five years (Table 6), and have presented a professional paper during that time (Table 7). Sixty-nine percent have earned graduate degrees (Table 8) while 57% are currently enrolled in, or are planning to apply for, academic programs leading to a higher degree (Table 9).

Clearly, EISO users are a highly professional, dynamic, well-educated, and ambitious group.

Organization

While OISE is still the institution with which most users are affiliated, it provides only a little over one-third of the total number of users (36.6%), a decline from 39.5% the previous year. Faculties of education, Ministry of Education, and other government agencies continue to provide increasingly more users while the number of school board clientele remain steady (Table 10).

Role

The roles performed by EISO users remained for the most part unchanged. Table 11 confirms that administration and teaching are still the most important roles occupied by EISO users. These are followed by graduate work and research. These profiles of user roles have shown little variation over a three-year period and will probably continue to remain stable.

TABLE 2

SEX OF EISO USERS

Sex	Percent		
	Year 1 (n = 376)	Year 2 (n = 370)	Year 3 (n = 129)
Male	69.7	63.5	68.2
Female	30.3	36.5	31.8

TABLE 3

AGES OF EISO USERS

Age Range in Years	Percent		
	Year 1 (n = 183)	Year 2 (n = 202)	Year 3 (n = 103)
25 or under	2.2	3.5	1.9
26 to 35	49.7	36.7	40.8
36 to 45	36.1	41.6	38.8
46 to 55	9.3	15.8	14.6
56 to 65	2.7	0.5	3.9
over 65	0.0	1.0	0.0

TABLE 4
NUMBER OF YEARS IN CURRENT POSITION

Interval in Years	Percent		
	Year 1 (n = 184)	Year 2 (n = 203)	Year 3 (n = 103)
Less than 1	21.2	13.3	18.4
1	10.9	11.3	15.5
2	9.8	15.3	14.6
3	11.4	11.3	6.8
4 to 6	24.5	21.7	15.5
7 to 9	14.1	14.8	8.7
10 or more	8.2	12.3	20.4

TABLE 5
OFFICER OF A PROFESSIONAL ORGANIZATION

Response	Percent		
	Year 1 (n = 183)	Year 2 (n = 202)	Year 3 (n = 103)
Yes	61.7	58.4	59.2
No	38.3	41.6	40.8

TABLE 6

PARTICIPATED IN EDUCATIONAL RESEARCH PROJECT IN THE PAST FIVE YEARS

Response	Percent		
	Year 1 (n = 185)	Year 2 (n = 200)	Year 3 (n = 99)
Yes	75.7	74.5	63.6
No	24.3	25.5	36.4

TABLE 7

PRESENTED A PROFESSIONAL PAPER IN THE PAST FIVE YEARS

Response	Percent		
	Year 1 (n = 185)	Year 2 (n = 200)	Year 3 (n = 103)
Yes	53.1	56.0	51.5
No	47.0	44.0	48.5

TABLE 8

HIGHEST DEGREE EARNED

Degree	Percent		
	Year 1 (n = 175)	Year 2 (n = 194)	Year 3 (n = 100)
Bachelor's	30.3	28.4	31.0
Master's	54.3	56.7	50.0
Doctorate	14.9	14.9	19.0
Other	0.6	0.0	0.0

TABLE 9

PRESENT OR PLANNED STUDIES FOR HIGHER DEGREE

Response	Percent		
	Year 1 (n = 382)	Year 2 (n = 200)	Year 3 (n = 102)
Yes	37.2	45.5	51.0
Not Sure	20.7	16.5	10.8
No	42.1	38.0	38.2

TABLE 10

ORGANIZATION OF PRIMARY ASSOCIATION

Organization	Percent					
	Year 1 (n = 380)		Year 2 (n = 369)		Year 3 (n = 129)	
Public Board	34.2	44.7	24.4	29.5	30.2	31.8
Separate Board	10.5		5.1		1.6	
Private School	0.8		0.8		0.0	
CAAT	4.7		4.1		2.3	
Faculty of Education	2.1		7.3		8.5	
OISE	30.8		39.5		36.6	
University	6.1		6.5		4.7	
Ministry of Education	3.7		5.4		7.0	
Professional Associations	0.8		3.8		2.3	
Government	1.8		1.1		3.1	
Business	1.8		0.5		1.6	
Other	2.6		1.6		2.3	

TABLE 11

PRIMARY PROFESSIONAL ROLE

Role	Percent					
	Year 1 (n = 245)		Year 2 (n = 207)		Year 3 (n = 103)	
Administration or Supervision	27.8		31.4		29.1	
Teaching	17.1		16.9		19.4	
Pupil Personnel	0.8		1.0		1.0	
Research	10.6		13.0		14.6	
Field Development	5.7		5.3		2.9	
Ministry Regional Office	3.3		1.9		4.9	
Library	6.9		8.2		1.9	
Private Consultant	2.4		1.4		1.9	
Undergraduate	0.0		0.5		0.0	
M.Ed. Student	3.3	21.7	0.5	16.0	3.9	18.5
Ed.D. Student	4.9		2.4		4.9	
M.A. Student	3.7		3.4		1.0	
Ph.D. Student	9.8		9.7		8.7	
Other	3.7		4.3		5.8	

The distribution of users by their roles in various organizations is presented in Table 12. In public boards, users were most likely to be administrators or supervisors (57%) though other staff also used EISO services to a significant degree with teachers, researchers, and librarians comprising another 35% of board users. All users from the separate boards fell within the administrative ranks while users in post-secondary institutions were distributed among administrators (33%), teachers (53%), and students (7%). Most OISE users were students (43%) though other staff categories were also represented. Regional Office personnel were the largest (60%) user group at the Ministry of Education.

It would appear that the patterns that were established in the first two years of the service continue to hold. EISO is used as a resource primarily by administrative personnel in school boards, by faculty in post-secondary institutions, by doctoral students at OISE, and by administrative and Regional Office staff at the Ministry of Education.

Purpose of Searches

Among all users, the most frequently cited purpose for doing a search was for term papers (Table 13). Research and development reports, policy development, speeches or articles, personnel or recruitment and program development were also listed as the purposes for placing EISO searches. Users tended to approach EISO as a resource to support their primary professional role. For example, within school boards administration was the most frequently mentioned role for doing a search (Table 14). These administrative personnel performed searches to aid them with their responsibilities for program improvement (23%), personnel recruitment (17%), policy development (13%), and curriculum development (13%) (Table 15). Though it would appear that a few administrators did place searches to help with their graduate studies, most sought information for purposes consistent with their professional positions.

TABLE 12

PROFESSIONAL ROLE BY ORGANIZATION FOR YEAR 1, 2, AND 3 USERS (N = 245, 207, 103)

Role	Organization																	
	Public Board			Separate Board			Postsecondary			OISE			Ministry of Education			Other		
	Year			Year			Year			Year			Year			Year		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Administration or Supervision	54%	59%	57%	64%	82%	100%	25%	21%	33%	2%	9%	10%	9%	50%	40%	17%	23%	0%
Teaching or Pupil Personnel	26	6	17	9	18	0	25	49	53	14	14	18	0	0	0	6	15	9
Research	6	11	13	18	0	0	0	8	7	13	17	15	9	14	0	22	23	36
Field Development or Regional Office	0	4	3	0	0	0	0	3	0	14	10	8	73	29	60	6	0	9
Library	10	17	7	5	0	0	8	3	0	7	8	0	0	7	0	0	0	0
Master's Student	0	0	0	5	0	0	21	5	7	11	8	10	0	0	0	6	0	0
Doctoral Student	1	0	0	0	0	0	13	3	0	36	30	33	0	0	0	0	8	9
Other	3	4	3	0	0	0	7	2	0	2	1	8	9	0	0	44	31	37
Total n =	78	53	30	22	11	2	24	29	15	90	77	40	11	14	5	18	13	11

TABLE 13
PURPOSE OF SEARCH

Purpose	Percent		
	Year 1 (n = 386)	Year 2 (n = 371)	Year 3 (n = 129)
Term Paper	31.3	30.5	33.3
Bibliography	3.6	1.9	1.6
Curriculum Development	7.5	8.4	5.4
Program Improvement	12.7	12.4	8.5
Speech or Article	2.8	3.8	9.3
Research and Development Report	28.8	23.5	15.5
Browsing	2.1	0.8	0.8
Personnel or Recruitment	2.1	4.9	9.3
Policy Development	6.7	10.5	11.6
Other	2.4	3.5	3.9

TABLE 14

ROLE FOR WHICH BIBLIOGRAPHY WAS REQUESTED BY ORGANIZATION FOR YEAR 2 AND 3 USERS (N = 231, 126)

Role for Which Request Made	Organization											
	Public Board		Separate Board		Postsecondary		OISE		Ministry of Education		Other	
	Year		Year		Year		Year		Year		Year	
	2	3	2	3	2	3	2	3	2	3	2	3
Administration or Supervision	42%	51%	25%	100%	9%	10%	4%	0%	14%	22%	17%	0%
Teaching or Pupil Personnel	11	5	0	0	4	5	5	2	0	0	0	8
Research	21	23	17	0	29	25	28	25	43	22	25	67
Field Development or Regional Office	3	5	33	0	4	0	6	0	29	44	8	0
Library	7	8	0	0	0	0	6	2	7	0	0	0
Master's Student	5	3	0	0	29	40	12	18	0	0	0	0
Doctoral Student	7	3	17	0	11	5	34	43	0	0	17	0
Other	5	3	8	0	13	15	7	9	7	11	33	25
Total n =	62	39	12	2	45	20	86	44	14	9	12	12

TABLE 15

PROFESSIONAL ROLE BY PURPOSE OF SEARCH FOR YEAR 2 AND 3 USERS (N = 207, 103)

Purpose	Role															
	Admin. or Super.		Teaching or Pupil Pers.		Research		Field Dev. or Reg. Off.		Library		Master's Student		Doctoral Student		Other	
	Year		Year		Year		Year		Year		Year		Year		Year	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Keeping Abreast	0%	3%	0%	14%	4%	7%	0%	13%	0%	0%	0%	0%	0%	0%	0%	0%
Term Paper	14	17	32	38	0	13	0	13	6	0	100	80	84	86	7	38
Bibliography	0	0	3	0	0	0	0	0	24	0	0	0	0	7	0	0
Curriculum Dev.	12	13	4	4	7	0	27	0	0	50	0	0	0	0	31	0
Program Improvement	20	23	5	10	11	0	27	13	24	0	0	0	4	0	23	0
Speech, Article	7	3	5	14	0	33	0	13	6	0	0	0	0	0	0	25
Research & Dev.	19	10	32	10	59	27	33	25	12	0	0	20	12	7	8	25
Browsing	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personnel Recruitmt.	8	17	5	0	0	7	7	25	6	0	0	0	0	0	15	10
Policy Development	17	13	5	10	15	13	0	0	18	50	0	0	0	0	15	13
Other	0	0	5	0	4	0	6	0	0	0	0	0	0	0	0	0
Total n =	65	30	37	21	27	15	15	8	17	2	8	5	25	14	8	8

This quantitative data gives a general overview of the user population and their reasons for requesting searches. To provide a more rounded picture of the human motivation that prompts specific searches and the factors that contribute toward the successful use of the information we must turn to descriptive or qualitative data. Such data is of course difficult to document and assess. Often influences beyond the control of the individual are overriding factors in whether or not information is used for the purposes for which it was originally sought. Another limiting factor is that evidence of usage has been compiled through interviews that relied on self-reporting. Though onsite observation may have provided more reliable evidence, these data are nevertheless presented for the insight they provide into some of the elements that determine use or non-use of search results.

Case Studies

The Psychologist

Dr. Barton is the dynamic administrator of pupil personnel services for a separate school board in the Metropolitan Toronto area. In her late thirties, she holds a doctorate in her specialty, child psychology, and has had five years experience in her current position. She is an active member of her professional organization, and has written several papers that were either published or presented at conferences. By her own admission, she is an avid information seeker, placing a high value on keeping up to date in her field. She heard about the existence of EISO from colleagues and decided to place a search when she found herself chairing a group of parents and teachers who felt there was an increasing need for a play therapy program for their children. "But one of the problems we had," she explained, "was that we did not have anyone here who had had extensive training or experience in play therapy. So one of the purposes of the group was to educate itself as well as to educate other staff members who would be using the service."

A telephone request was submitted to the search analyst who was able to retrieve sixty-three citations on play therapy from the *Psychological Abstracts* data base. The bibliography was mailed to Dr. Barton who subsequently ordered twenty-four journal articles of which EISO supplied her with copies of twelve. These were divided up among the members of the committee who used them as a basis for seminar presentations to their group. The information thus presented broadened the group's view of play therapy, according to Dr. Barton. While they had previously been using a traditional kind of definition, they now encountered an unstructured, non-directive therapy program. They were also introduced to other ideas for use of the play room, such as having mother and child go in together for observation. Toys were placed in waiting rooms and social workers' offices; the play room began to be used for assessment purposes; programs were expanded to educate the mothers as well as the children. Play activity became a means of teaching social skills.

Although the psychologist has become a repeat user of the service, she expressed only moderate satisfaction with the bibliography and materials she received as a result of her automated search. Her enthusiasm was dampened when she discovered that the data base searched for her did not contain early classic works written on play therapy. There was also some question about whether she had obtained all relevant items in the data base since the term "play therapy" seemed to be a recent one. Last, she had had some difficulty obtaining all the relevant articles that had been cited in the bibliography.

The Junior High Principal

Mr. Albert had been the junior high principal for three years. He was not an especially avid information seeker but did make efforts to keep abreast of his field. In the evenings he was pursuing an M.Ed. degree at OISE.

At the time of his search, he was spear-heading a drive in his school to revise the music program from a strictly instrumental to a more diversified one. Having learned about

EISO through his graduate studies and from brochures mailed to his school, he decided to telephone the search analyst for help. As he put it:

> We wanted to see what else had been done in other jurisdictions, what else had been written and tried and was available in the field rather than start from scratch. We figured a lot of people had probably done things before and we wanted to avoid making the same mistakes.

Searching the ERIC data base, the search analyst retrieved eighty-three citations that were printed offline and mailed to the principal. He then turned over the bibliography to his two music teachers who reviewed it and went to their own board's professional library to examine the relevant articles and microfiche. They rated their satisfaction with the bibliography and materials between "medium" and "high." Basically, they felt that the search had been valuable but that too much material had been found. They were frustrated at not having the time to read twenty-five microfiche and thought that in future they would confine themselves to defining their problem more narrowly. They also felt that in future they would visit the search analyst in person rather than communicate via telephone. This more personal method would, they felt, better enable them to clarify their "muddle" as they put it, and to understand the search process better.

These difficulties aside, the music teachers, with the principal's support, initiated a diversified music program for the first half of their grade seven unit. The principal also saw other positive results from the search.

> There was the indirect benefit of exposing the music staff to this kind of information. From now on, when they encounter a problem, they are more likely to ask whether anything has been written on it in the literature since they have at least on one occasion asked the kind of question that would not have been asked before.

The principal testifed to the success of the new music program and credited many of the successful components to ideas gleaned from materials obtained through the EISO search.

The Program Coordinator

At the separate school board in Hamilton the program coordinator was sitting on a committee looking into the role of the elementary school principal. The group was especially concerned with what their own system could to to prepare staff for the principalship and how principals were evaluated. The committee was composed of an area superintendent who acted as chairman, three principals, a teacher, a vice-principal, and the coordinator. They had been working together for a year and had focused in on a Management by Objectives (MBO) evaluation model. Having settled on a direction for themselves, they decided to consult the professional literature to find out what was going on elsewhere.

The coordinator filled out the search request form on a brochure and mailed it in to the EISO office in Toronto. The search analyst clarified the request over the telephone and eventually retrieved 112 citations on training for and evaluating the role of the principal. This extensive bibliography was divided up among the members of the committee each of whom gave a talk about the relevant items they had examined at their local learning resources center. They were highly satisfied with the bibliography and the materials. The coordinator expressed their feelings this way: "Personally, we were delighted with the whole thing. It gave us what we wanted very quickly." What resulted from their search? She continued:

> Well, out of it came the document "The Role of the Elementary School Principal" which is now in use. We have a whole evaluation process for principals in place based on a Management by Objectives model. We had in as speaker one of the authors of the articles.

In terms of the preparation of principals, the search brought to light the notion of internship programs and a sub-committee was set up to examine the feasibility of that specific idea. Summing up the contribution the EISO search had made to the committee's work, the coordinator said:

> It gave us the kind of information that, in spite of the fact that we already had the direction, lent support for our position. It couldn't be regarded as just some silly thing we thought up all by ourselves. It was comforting to be able to wave the literature around when presentations were made.

The use of the materials did not come to an end with the original committee, however. As indicated, a subcommittee was formed to investigate further the internship notion. They too used the articles retrieved. One of the committee members also passed on the materials to a colleague responsible for staff development at a local hospital.

The Superintendent

George Baxter is a well-known opinion leader in local and provincial educational circles. He has held increasingly responsible positions in school boards and at the time of his search was serving as superintendent of instruction with an expanding, innovative school board adjacent to Metro Toronto. His search was prompted by a series of leadership workshops that he was running for his staff. He wanted specifically to find out more about the phenomenon of "group think."

His search was performed on the ERIC, *Psychological Abstracts*, and *Sociological Abstracts* data bases and he claimed to be very satisfied with the results. He abstracted the articles he examined, created overhead transparencies showing the salient points of each item, and with his packages on group think gave five workshops to a group of department heads. Another group of teachers learned about these sessions and requested that similar presentations be made to them. They in turn borrowed the superintendent's materials and used them with some students in their secondary schools. The same material was further used by a group of principals and administrative staff within the board studying the decision-making process.

Using the service has become the accepted first step of most working committees in this board. The superintendent commented on this widespread usage: "It's the best money we've ever spent." As to his own use of EISO, he stated:

> If I want to give a talk or I'm developing a paper, very, very often I won't do it until I do an EISO search. It's good to know that I can get resources if I want them. It's nice to know the service exists whether I want to use it or not, and I do use it. It has that kind of comforting psychological effect.

The Ph.D. Student

As a doctoral student in curriculum, Mr. Abott was interested in doing a research paper on reading comprehension. Though he spent forty-five minutes with the search analyst and they went through the ERIC *Thesaurus* together, the student was unable to define his topic in much detail. There was some doubt about whether he was concerned with reading comprehension, listening ability, or the effect of the teacher on student achievement in either, neither, or both areas.

An examination of the Search Request Form completed by the search analyst shows that two searches were performed, one on the effect that a teacher's attitudes and teaching methods have on student listening comprehension and another on the effect that a teacher's attitudes and teaching methods have on reading comprehension. A total of thirty-four citations were retrieved and sent to Mr. Abott.

He expressed disappointment in the bibliography that resulted from his search. Too much of the material, he felt, dealt with the comprehension of other languages and with the teaching of reading as a subject whereas his interest now lay "in the more theoretical stuff, how the brain operates, how language is developed, how people understand and comprehend language."

The search results were filed in his office where they remained unused. At the time of the follow-up evaluation interview, a year later, the student was still struggling to define his research topic.

The M.Ed. Student

As a teacher of industrial arts at an intermediate school in a Toronto borough, Mr. Taylor had students from both middle- and lower-income areas in his classes. He had begun to feel that students from these two different types of backgrounds regarded industrial arts as a subject quite differently. So as an M.Ed. student at OISE, he decided to focus the topic of the required paper in one of his courses on this concern. As he put it:

> I was attempting to find out whether in fact children with lower socio-economic backgrounds would have different attitudes to industrial arts than those from high SES backgrounds. I was using the search to find out what the literature said.

The search analyst devised a search that retrieved thirty-seven citations. These proved to be of little use to Mr. Taylor, however. He glanced through the bibliography rapidly, and, pressed to hand in his assignment, decided to rely on articles that had been handed out in class. He did not order any original materials, or otherwise use the results of the search in any way. He remembered having difficulty with the format of the bibliography and feeling that the effort required of him to order materials, read, and digest them was too great a burden when added to his full-time teaching load. For his course assignment, he submitted a term paper that dealt with experiences in his own classroom.

The Primary Teacher

At a public school board at the opposite end of Metro Toronto, another industrial arts teacher was also placing an EISO search. He was hoping to apply for a leave of absence and placed his search to bolster the presentation he needed to present to his board to be granted leave.

An examination of his Search Request Form showed that the search analyst combined the concepts of slow learners, perceptual-motor coordination, and classroom materials to yeild a bibliography of fifty citations. These proved to be irrelevant to the industrial arts teacher, who placed his search output in his file and forgot about it. When asked if he could explain what had gone wrong, he gave the following answer:

> The project for which I was applying for funds dealt with the work-bench approach to teaching industrial arts in the primary grades. I didn't really know what to ask for. I knew what the general topic was, what the general idea was, but I didn't really know any of the specific things that the search analyst was asking me because I hadn't studied it before. The girl on the phone wanted to know more about it and I couldn't tell her more. I couldn't explain to her what I needed because I didn't know. All I knew was the work-bench approach.

Factors Contributing to Use or Non-Use of Search Results

The seven mini-cases described above, though they represent an admittedly limited sample of users, nevertheless point to some factors that either encourage or pose barriers to the use of information received as a result of placing an EISO search. These factors may be evident during both the pre-search and post-search and are described in Table 16. Circumstances pertaining to the intervening search negotiation are examined elsewhere in this report.

Of the seven users shown in Table 16, the psychologist, junior high principal, program coordinator, and superintendent all illustrate degrees of information use while the two students and the primary teacher are examples of non-users. To what factors can we attribute these differences?

The psychologist, it will be recalled, was an active researcher with the typical profile of an innovator. She was also the chairman of a committee that was motivated to find answers to a pressing problem and she had the authority both to see that a search was placed and that its results were implemented. Upon receipt of the articles, she distributed them to her committee members who then assumed joint responsibility for putting new programs into effect. The negative aspects of the search, according to the psychologist, related to the fact that few "classics" in the field were retrieved, that the concept of "play therapy" was a relatively new term and therefore might restrict the number of relevant citations retrieved, and the difficulty of obtaining some original articles.

TABLE 16

FACTORS AFFECTING INFORMATION USAGE

	User	Search Phase			
		Pre-Search Phase		Post-Search Phase	
		Pros	Cons	Pros	Cons
POSITIVE	Psychologist	1. Active researcher 2. Chairman of committee with information need 3. Authority to implement	1. No "classics" 2. Newness of "play therapy"	1. Articles to comittee members 2. Committee responsible for implementation	1. Difficulty in obtaining articles
	Junior High School Principal	1. Postgraduate student 2. Dissatisfaction with existing programs 3. Authority of position	1. Telephoned request	1. Support of principal 2. Literature reviewed by teachers	1. Too much material 2. Too little time 3. Inadequacy of telephone interview
	Program Coordinator	1. Committee-initiated search 2. Well-defined problem 3. Authority		1. Articles to committee members 2. Each member gave talk 3. Author invited as guest speaker 4. Information supported position 5. New information provided 6. Speed	
	Superintendent	1. Opinion leader 2. Information needed for workshops		1. Information made into packages 2. Workshops given to department heads	
NEGATIVE	Ph.D. Student	1. Postgraduate student	1. Undefined information problem 2. Inability to communicate		1. Irrelevant material 2. Different topic
	M.Ed. Student	1. Postgraduate student	1. No information need 2. Limited course requirements 3. Job pressures		1. Format of bibliography 2. Quantity of information 3. Lack of urgency 4. Effort required to obtain documents
	Primary Teacher		1. Unable to explain topic		1. Irrelevant material

The junior high school principal, though not as involved in research as the psychologist, nevertheless also made efforts to keep abreats of his field and was pursuing an M.Ed. degree in his spare time. While he did not head a committee, he was the leader of his school with prime responsibility for its programs. In this role, he recognized the inadequacies of his music program and determined to correct them. To achieve his aim, he gained the support of his two music specialists, encouraged them to review the literature he had obtained and to initiate appropriate program changes. Though the information obtained was used, the results of the search presented some problems: too much material was obtained; there was not enough time to read it all; there was some dissatisfaction with placing the request by telephone rather than in person.

The program coordinator, though not chairman of his committee, was also a member of a high-powered group that had been working together for a considerable period of time looking at the role of the elementary school principal. They had determined what their information need was and charged the program coordinator with the responsibility of placing a search. Subsequently, each member of the committee made a presentation using the documents obtained as a result of their search. The information they received was relevant to their concern, supporting their ideas and presenting them with new ones.

The superintendent was not a member of a committee but he was a charismatic leader within his own school board as well as in broader educational circles. He exercised one aspect of his professional role by presenting workshops for his staff. It was to develop these presentations that he placed a search. The information he received was transformed into packages that were used at his workshops and distributed to other teachers requesting them. The superintendent was known to his staff as an avid information seeker and user.

To this point, each of the four requestors represents an active information user. The factors that enabled them to become users or facilitators of information use are remarkably similar in each case. All had personal characteristics that are normally associated with innovators. They were active, involved, highly educated, outgoing professionals. But most important for this study, there were also articulate, able to define and verbalize their information problem, aware of the sources they could call upon, and possessed with a healthy belief in the efficacy of research and a curiosity to learn about what was going on elsewhere. Furthermore, they were also highly motivated. This motivation may have resulted from personal or professional needs but in every case there was a real, concrete, identified problem to be solved or situation to be changed. Third, each user was in a position of authority to initiate a search himself or to cause others to do so. This authority may have resulted from legal position (the principal), expertise (the psychologist), delegation (the program coordinator), or charisma (the superintendent) but in each case it ensured that a search would be made and its results considered and used, if at all possible.

While all of these variables were crucial in the pre-search phase and continued to be important later, still other elements became important during the post-search period. Here, too, we note that all four cases have certain common features. For example, in each case the original documents obtained were passed on to those responsible for effecting change. The information was shared and in some cases adopted by committee or staff members. Joint ownership and commitment was developed. Those who received, digested, and adapted the information to their own needs were also those with responsibility for carrying through the results of their plans, i.e., the seekers, the receivers, and the users were all the same people. In the case of the superintendent, there was also heavy secondary use of the information packages. Most of this type of usage can be attributed to the charismatic authority of the superintendent, to the raised awareness of his staff, and the value attributed to information use by him.

The last three cases on Table 16 illustrate those factors that pose barriers to information use. The doctoral student was still in an early stage of his program and had not yet defined his research topic with sufficient clarity. He had a vague notion that he might be interested in the effect of teacher attitudes on student achievement but was really unable to be more specific. In any event, shortly after placing his search his interests shifted to another area and he found the bibliography he received of limited value.

The masters' student, while he had a reasonably well-defined topic, really had no need to place a search. His instructor had handed out copies of relevant articles to his class and the course assignment did not seem to require more extensive resources. There is therefore some question as to why he placed the search at all. When he received his bibliography he was discouraged from obtaining or using original documents by the time constraints placed on him by his regular job, the discouragingly large amount of material available, the format of the bibliography, and the fact that he already possessed sufficient resources to complete his course assignment.

The primary teacher, though having a reason for placing a search, was nevertheless unable to explain to the search analyst what his topic was about. He was limited to a single approach in teaching industrial arts and was unable to expand upon it or place it in a context for the further edification of the search analyst. By his own admission, he knew very little about his topic and did not know what to ask for. Not surprisingly, he found the bibliography he received irrelevant.

From these brief sketches, we can see that the non-users of information also share some common characteristics. Among these are the lack of a clearly defined problem and/or the inability to articulate that problem to the search analyst. These were especially true in the cases of the doctoral student and the primary teacher. Lack of motivation or real need was a deterrent to usage in the case of the masters' student although he was also discouraged by the format and quantity of material, the effort needed to acquire documents, and the time pressures of his job and course requirements. These latter factors were operative most clearly in the post-search phase. Lack of commitment in this later stage also prevented the doctoral student and the primary teacher from following through with their original concerns.

Conclusion

It is interesting to note that whereas in the cases of successful information use each user was spurred on by the need to report to or work with staff or committees, the non-users were all loners. It might be expected, therefore, that they would have to display greater independence, self-reliance, and personal motivation than the successful users and would not have the rewards of immediate positive feedback. In the cases dealt with here, this increased burden of responsibility without positive external support created a barrier to use that was not overcome.

CHAPTER 3

USER SATISFACTION WITH EISO

One of the most important and most difficult aspects of an online search service to evaluate is the satisfaction of the user. User satisfaction is significant because it will affect the ultimate success of the service: a satisfied user is more likely to become a repeat user and an advocate of the system that has met his needs. And it is the build-up of a steady clientele and the spread of its success by word of mouth that will help to ensure its long-term operation. Measuring user satisfaction, however, is fraught with difficulties for we are trying to assess what is, after all, a state of mind. Not only is it highly subjective, but it is in all likelihood subject to frequent shifts and changes. What may be judged satisfactory at one point in time may be considered less so at another. So the problem of when to assess satisfaction is a real one. Equally troublesome is what to measure. A search service consists of numerous elements that may each contribute to the perceived satisfaction of the user. Such elements may include everything from the user's interview with the search analyst to the speed with which original documents are received. Performance at each of numerous stages will influence the satisfaction of the user.

Recognizing this complexity the Educational Information System for Ontario developed an evaluation scheme based on a systems model using psychological, sociological, and economic variables within an adoption of innovations framework. This schema and its reliability were described in detail in earlier reports (Auster and Lawton, 1976, pp. 56-84; and Lawton and

Auster, 1977, pp. 30-68). It is the purpose of this chapter, therefore, to present satisfaction data for a three-year period and to examine an aspect of the service not reported on before, namely comparison of the satisfaction levels of users who did and did not go through Educational Information Consultants (EICs) in order to use the service.

The five scales used to measure user satisfaction are listed in Table 17. These are: Publicity Materials and Directions, Quality of Service, Timeliness of Service, Quality of Technology, and Value of Bibliography and Materials. A sixth composite scale measures Overall Satisfaction.

Yearly Satisfaction Averages

A comparison of the average satisfaction of EISO users over the three years of the service's operation shows a remarkable consistency. Changes in average level of satisfaction ranged from an increase of .20 for Timeliness of Service to a decrease of .04 for Quality of Technology. There was virtually no significant variation in perceived satisfaction among EISO users over the three-year period with the average user being highly satisfied with the service he received. This high average satisfaction was expressed by means of 2.61 and 2.78 for Overall Satisfaction and Quality of Service, respectively, on a three-point scale. Table 18 shows that fewer than 5% of users were not satisfied with the outputs of the service, the Value of the Bibliography and Materials, during the most recent year of operation. This represents a significant improvement from the more than 12% who expressed reservations the previous year or the almost 10% in the first year. Clearly, EISO continues to improve, with over 95% of users being satisfied with the service provided.

A more detailed breakdown of the five rating scales in Table 19 reveals similar responses to the scale items. On the same three-point scale mentioned earlier the least satisfactory item was judged to be the time taken to deliver materials from EDRS with a mean of 2.09 and no aspect of the service was judged to be unsatisfactory. It should be noted

TABLE 17

SATISFACTION SCALE MEANS, STANDARD DEVIATIONS, AND FREQUENCIES[1]

Scale	Satisfaction								
	Year 1			Year 2			Year 3		
	$\bar{X}$	s	n	$\bar{X}$	s	n	$\bar{X}$	s	n
Publicity Materials and Directions	2.57	1.00	88	2.58	0.45	198	2.56	0.40	114
Quality of Service	2.81	0.60	200	2.76	0.39	211	2.78	0.37	110
Timeliness of Service	2.31	1.09	25	2.40	0.44	36	2.60	0.42	19
Quality of Technology	2.42	0.76	56	2.53	0.38	87	2.49	0.40	47
Value of Bibliography and Materials	2.24	0.87	133	2.30	0.67	179	2.36	0.57	102
Overall Satisfaction	2.61	0.77	180	2.60	0.35	188	2.61	0.30	100

[1] Scale means relate to a three-point scale: 3 = high satisfaction, 2 = medium satisfaction, and 1 = low satisfaction.

TABLE 18

PERCENTAGE DISTRIBUTION FOR SATISFACTION WITH QUALITY OF BIBLIOGRAPHY AND MATERIALS BY YEAR

Level of Satisfaction[1]	Percent		
	Year 1	Year 2	Year 3
High	45.1	52.5	51.9
Medium	45.1	35.2	43.1
Low	9.8	12.3	4.9
Total n =	133	179	102

[1] Classifications are as follows: high, 2.50 or 3.0; medium, 1.5 or 2.0; and low, 1.00.

TABLE 19

SATISFACTION ITEM MEANS, STANDARD DEVIATIONS, AND FREQUENCIES

Scale Item	Satisfaction								
	Year 1			Year 2			Year 3		
	$\bar{X}$	s	n	$\bar{X}$	s	n	$\bar{X}$	s	n
Publicity Materials and Directions									
Accuracy and comprehensiveness of publicity materials	2.45	0.66	112	2.47	0.61	208	2.42	0.55	116
Adequacy of directions for submitting search requests[1]	2.68	0.55	143	--	--	--	--	--	--
Convenience of arrangements and adequacy of directions[1]	--	--	--	2.70	0.52	225	2.69	0.51	124
Adequacy of directions for ordering copies of materials	2.51	0.69	182	2.55	0.62	212	2.57	0.55	122
Quality of Service									
Convenience of arrangements to obtain EISO searches[1]	2.84	0.41	237	--	--	--	--	--	--
Convenience of arrangements and adequacy of directions[1]	--	--	--	2.70	0.52	225	2.69	0.51	124
Helpfulness of Search Analyst or EIC	2.88	0.37	225	2.81	0.47	218	2.86	0.37	114
Time devoted to search interview[2]	2.71	0.58	208	--	--	--	--	--	--

TABLE 19 (Cont'd.)

Scale Item	Satisfaction								
	Year 1			Year 2			Year 3		
	$\bar{X}$	s	n	$\bar{X}$	s	n	$\bar{X}$	s	n
Timeliness of Service									
Time taken to deliver bibliography	2.64	0.63	224	2.50	0.65	227	2.66	0.51	125
Time taken to deliver materials from EDRS	2.24	0.83	33	2.06	0.66	54	2.09	0.71	34
Time taken to deliver materials from EISO	2.42	0.72	53	2.54	0.61	65	2.86	0.44	29
Quality of Technology									
Length of bibliography	2.41	0.66	227	2.51	0.60	216	2.50	0.61	118
Readability of microfiche copies	2.33	0.70	93	2.38	0.59	123	2.35	0.63	60
Availability of microfiche readers	2.58	0.67	121	2.56	0.63	118	2.55	0.62	62
Value of Bibliography and Materials									
Bibliography itself	2.19	0.69	221	2.33	0.70	216	2.40	0.63	116
Materials located via bibliography	2.25	0.68	134	2.28	0.72	182	2.31	0.61	102

[1] Separate questions concerning convenience of arrangements and adequacy of directions for submitting search requests were asked in Year 1, but the two items were combined in Year 2 and Year 3.

[2] Item on time devoted to search interview did not appear on Year 2 or Year 3 questionnaires.

that corrective action was taken to provide more effective document delivery by contracting with MicroMedia, a local firm, to provide paper copies from fiche. Thus the long wait formerly necessary for users dealing with ERIC Document Reproduction Service (EDRS) in the U.S. has been eliminated.

Those aspects of the service that were felt to be most satisfactory, with 2.86 on a possible scale of 3, were the time taken to deliver materials from EISO, and the helpfulness of search analyst or EIC. Since the speed of the service and the interaction with the search analyst are two of the main distinguishing characteristics (and therefore selling points) of online retrieval, it is gratifying to know that these important aspects are being carried out well. On the whole, then, these statistics show a service that has established high standards and is succeeding in maintaining them.

Monthly Satisfaction Averages

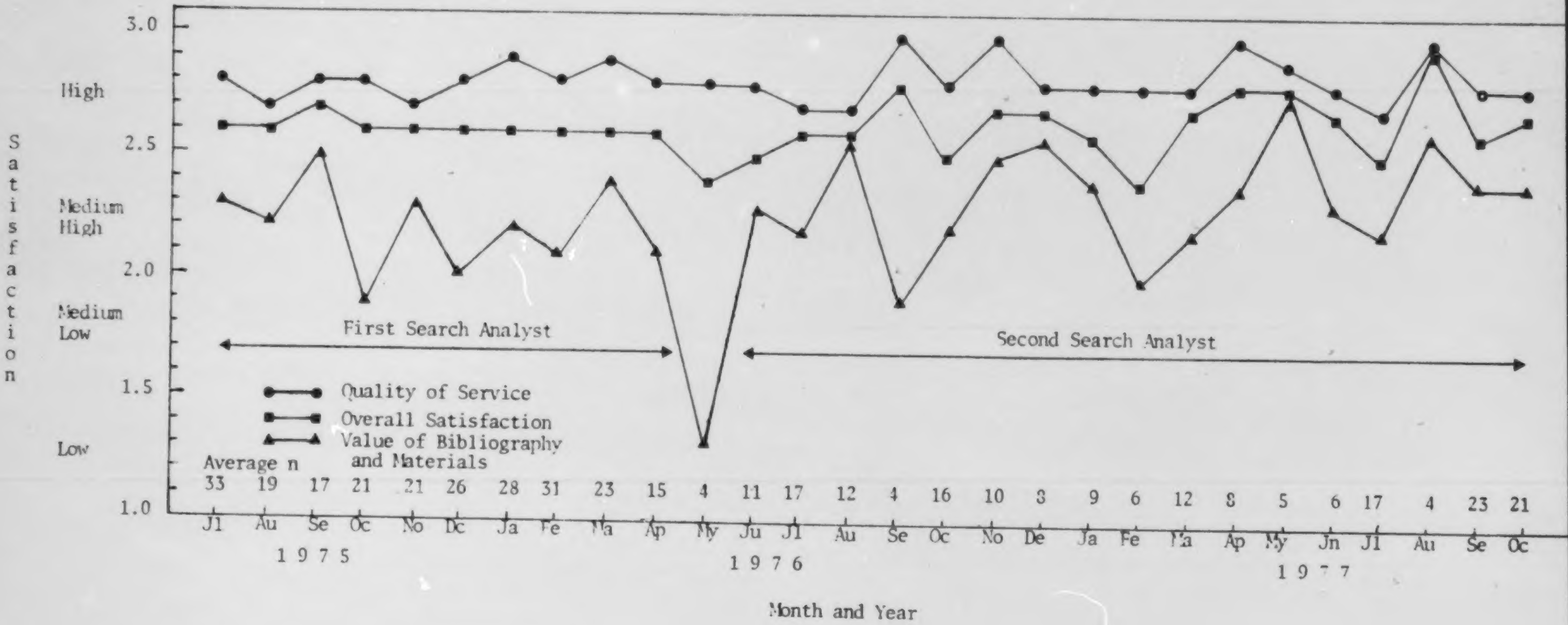
While it is true that, on the whole, the EISO service is maintaining high standards, fluctuations do occur from month to month depending on the time of year, major changes in system operations, and the size of the sample for whom responses were received. It is as well to recognize that these variations do occur and in fact appear to be a normal part of the service environment so that undue anxiety or uncalled for shifts in policy are avoided.

Among the most important measures assessing the satisfaction of users with EISO are those evaluating their perception about the Quality of Service and the Value of Bibliography and Materials. Because of the importance of these aspects, mean satisfaction levels of users regarding them were plotted on a monthly basis from July 1975 through October 1977. An average Overall Satisfaction level was also obtained. A graphic description of the results is seen in Figure 1.

Trends during the tenure of the first search analyst were analyzed in EISO's *Second Interim Report: March 1976 - February 1977* (Lawton and Auster, 1977, pp. 44-50). Briefly, it was found that Overall Satisfaction was remarkably steady, ranging between 2.4 and 2.7 on the three-point scale employed.

FIGURE 1

AVERAGE USER SATISFACTION BY MONTH



The monthly average remained within ±0.1 units of 2.6. A noticeable drop did occur, however, during the Spring of 1976 but this was attributed to the hiring and "breaking in" period of a new search analyst. It was also noted that overall satisfaction tended to decline during those periods when demands for searches reached peak levels of 55 or more per month.

An analysis of trends since the employment of the second search analyst reveals two interesting features. First, the previously observed decline in satisfaction levels with the Value of Bibliography and Materials during hectic periods seems to be continuing, though with less frequency. It should be noted, however, that this "decline" in satisfaction is a relative thing. That is, the satisfaction level for this item never fell below 2.0 between October 1976 and October 1977. This means that even at its worst, the service was never seen to be below a medium-high level of performance.

Second, the Quality of Service has on four separate occasions (September 1976, November 1976, April 1977, August 1977) been assessed at 3.0, the highest level attainable on a scale of three points. During that same October 1976 to October 1977 period Quality of Service never fell below 2.7 and hovered at the 2.8 level. These statistics confirm that the perceived performance of the search analyst is critical in maintaining high user satisfaction with the search service. It also points to the fact that the user is able to make distinctions between the service he received from the analyst and the final output of the system, i.e., the bibliography and materials he receives. It also seems reasonable to assume that he may also be able and willing to ascribe his lesser satisfaction with his bibliography to factors beyond the immediate influence or control of the search analyst, such as appropriateness of topic, extent of materials available, or system features. This ability to separate and distinguish between the performance of the analyst and that of the search system is important because it suggests that a user will be more willing to place another search on a different topic if he feels that everything humanly possible will be done to meet his needs.

Satisfaction of EIC Versus Non-EIC Users

Because the human element of relaying and using information was, from the very beginning of this research project, regarded as critical, it was felt that some special provision had to be made for users who were located at a distance from Metropolitan Toronto and thus did not have immediate access to the service. The basic assumption was that the provision of an intermediary, called an Educational Information Consultant, or EIC, familiar with local conditions and needs, would lead to a more satisfied user and more effective dissemination and utilization of knowledge. In turn, a satisfied user, according to adoption of innovation models, could be expected to become a repeat user who would have the obvious effect of ensuring the maintenance and growth of the information service.

To test whether or not such assumptions could be proved empirically, special treatment was given to the Northwestern Region of Ontario. There, four EICs in different types of institutions were trained, demonstrations of the service were held, and reduced rates were instituted for the first year of the service's operation. It was expected that this greater effort would result in a disproportionately large number of search requests from this area. Table 20 below shows that this effort was successful, at least initially. In the first

TABLE 20

USERS LOCATED IN NORTHEASTERN REGION (REGION 3)

Response	Percent		
	Year 1	Year 2	Year 3
Yes	13.9	5.4	3.9
No	86.1	94.6	96.1
Total n =	380	371	129

two years, the region, with only 4% of the province's enrolment in elementary and secondary schools, was overrepresented. The decline in the second year from 14% to 5% is due in part to the exhaustion of free searches. The 4% usage level in the third year is in keeping with the proportion of the area's population.

Of these users, however, not all went through EICs. Table 21 shows whether the user went directly to the search analyst or through a local intermediary to have his search formulated. The reasons for the decline from almost 10% to 2% between the first and second years are uncertain but may reflect, among other things, the exhaustion of free searches in the area, or simply a poor return of questionnaires. It is also worth noting that these statistics do not take into account the activities of the EIC associated with a local school board. Nevertheless, it was later found that 61 users in the Northeastern Region had used EISO. Of these 61, 18 had returned questionnaires showing they had gone through EICs, while a further 43 had not gone through EICs.

TABLE 21

WHO ASSISTED IN FORMULATING SEARCH REQUEST

Role of Assistant	Percent					
	Year 1		Year 2		Year 3	
Search Analyst	85.9		97.8		97.7	
Field Centre EIC	7.3	9.7	1.1	1.9	0	2.4
Faculty of Education/CAAT EIC	0.8		0.8		2.4	
Ministry of Education EIC	1.6		0		0	
Not Sure	1.3		0		0	
Other	3.1		0.3		0	
Total n =	382		371		129	

Table 22 shows the means, standard deviations, and frequencies for that sub-sample of users who returned their evaluation questionnaires. Though statistical significance is important, it is not, however, the sole criterion for determining the importance of a relationship. Particularly when one is concerned with policy decisions, the strength of a relationship can indicate its practical importance. In the present case, a difference between means of 0.2 on the three-point satisfaction scale is considered to be of no practical significance. Differences of 0.4, 0.6, and 0.8 or greater are considered to be of low, medium, or high practical significance, respectively. Due to the small sample size, analyses of both statistical and practical significance are given, recognizing that where only the latter obtains, further research is needed to confirm the existence of the relationship. For the convenience of the reader the 15 satisfaction items are grouped into the same five categories used earlier.

In the present context, the five main groupings in Table 22 might be regarded as corresponding to the stages that a typical user would go through to place a search. First, he would obviously have to become aware of the existence of the service. Publicity Materials and Directions covers those aspects that explain the technical points about using the service to the user. These instructions were available in a variety of written formats and appeared as articles in professional journals, advertisements, and brochures. It was expected, though, according to the literature, that personal contact, either informally or through staff meetings and planned presentations, would be the most effective method of informing users about the service. And indeed, the first goal the EICs were asked to achieve in their initial training was to make users aware of their availability and the services they could provide. Therefore, one would expect the EIC users to be somewhat more satisfied with their information about the service than non-EIC users who were not exposed to such personal efforts. There is evidence to support that this was in fact the case.

TABLE 22

MEANS, STANDARD DEVIATIONS, AND FREQUENCIES FOR SATISFACTION OF EIC VERSUS NON-EIC USERS

Aspects of EISO	EIC User			Non-EIC User			F-Ratio
	$\overline{X}$	s	n	$\overline{X}$	s	n	
Publicity Materials and Directions							
Accuracy of publicity materials, EISO presentations, etc.	2.8	0.45	5	2.4	0.79	12	1.01
Comprehensiveness of publicity materials, EISO presentations, etc.	2.7	0.52	6	2.2	0.67	9	1.89
Adequacy of directions for submitting search requests to EISO	2.5	0.76	8	2.3	0.76	12	0.53
Adequacy of directions for ordering copies of materials	2.6	0.73	9	2.1	0.90	18	1.65
Quality of Service							
Convenience of arrangements to obtain EISO searches	2.9	0.33	9	2.6	0.61	20	2.46
Helpfulness of search analyst or Educational Information Consultant	2.8	0.62	12	2.6	0.62	16	0.28
Time devoted to search interviews with search analyst or Educational Information Consultant	2.2	0.84	5	2.4	0.79	13	0.20

TABLE 22 (Cont'd.)

Aspects of EISO	EIC User			Non-EIC User			F-Ratio
	$\overline{X}$	2	n	$\overline{X}$	s	n	
Timeliness of Service							
Time taken to deliver the EISO bibliography	2.1	0.83	11	2.7	0.48	16	5.61†
Time taken to deliver microfiche or paper copies ordered from EDRS in the U.S., if applicable	2.0	0	2	2.3	0.58	3	0.60
Time taken to deliver microfiche or paper copies ordered from EISO	2.3	0.58	3	2.4	0.55	5	0.03
Quality of Technology							
Length of bibliography	2.8	0.44	9	2.2	0.66	17	4.82†
Readability of microfiche copies, if applicable	2.5	0.55	6	2.1	0.69	7	1.04
Availability of microfiche readers	2.8	0.44	9	2.4	0.92	8	1.39
Value of Search Output							
Value of bibliography	2.2	0.79	10	2.3	0.60	16	0.17
Value of materials	2.5	0.55	6	2.2	0.83	9	0.51

†Significant at the .05 level.

Looking at the four items in Table 22 that apply to providing the user with Publicity Materials and Directions, we find that, measured on a three-point scale with three being the highest level achievable, the mean satisfaction level for EIC users was consistently higher than for non-EIC users. For accuracy of publicity materials it was 2.8 as against 2.4; for comprehensiveness of publicity materials it was 2.7 as against 2.2; for adequacy of directions for submitting search requests to EISO it was 2.5 to 2.3; for adequacy of directions for ordering copies of materials it was 2.6 as compared with 2.1. While it is true that these figures are not statistically significant, all of these differences are either of low or medium practical significance. Such a consistent relationship between the use of an EIC and higher satisfaction is of interest to the policy maker pending confirmation.

Since one of the main reasons for having EICs in the Northeastern Region was to improve the accessibility to the information service for geographically remote users, one would expect EIC users to be more satisfied with the Quality of Service than those who did not use the service through a local intermediary. This did not appear to be the case, however, since there was no difference of practical or statistical significance between the satisfaction levels of EIC and non-EIC users with the convenience of arrangements to obtain EISO searches (2.9 to 2.6) or the helpfulness of the search analyst or Educational Information Consultant (2.8 to 2.6). It will be noted that both groups of users were very satisfied with these aspects of the service and less satisfied (2.2 and 2.4) with the time devoted to the search interview with the search analyst or Education Information Consultant. This lower satisfaction -- again showing no practical or statistical differences -- may be explained by the fact that, whether a user goes through an EIC or directly to the search analyst, there are constraints. Some EIC users negotiated their searches "on the run" because of their own job situations, and thus the result may be as much a reflection of the user's own ability to take time out for an adequate interview as the availability of the EIC. Non-EIC users may never, in fact, have spoken to the analyst because they submitted their request by mail or, if they did speak to her, it may have been rather hurriedly by long-distance telephone, a mode not conducive to leisurely problem definition because of the costs involved.

The areas where one would expect the non-EIC user to have the advantage over the EIC user are those that relate to time. For the non-EIC user would typically receive his bibliography directly from the search analyst, he would be responsible for ordering his own materials, and he would receive these original documents in microfiche or paper copy without the intervention of an intermediary who would represent another step in the delivery process. The results shown for the items included under Timeliness of Service seem to bear this out for one aspect: time taken to deliver the EISO bibliography, where the non-EIC user has a satisfaction level of 2.7 and the EIC user one of 2.1. This difference is great enough to be of statistical significance as well as medium practical significance. Since the other two items in this area, time taken to deliver microfiche or paper copies from EDRS in the U.S., and time taken to deliver microfiche or paper copies from EISO, showed no statistical significance and low (2.3 to 2.0) and no (2.4 to 2.3) practical significance respectively, the results may suggest that going through an EIC is influential at the first stage of the delivery process but does not affect the later stages involving delivery of materials from EDRS or EISO.

In the items related to the Quality of Technology, there is one that shows a statistical and medium level of practical significance in favour of EIC users' satisfaction with the length of bibliography. This difference (2.8 to 2.2) might be attributed to the greater familiarity of the EIC with the precise needs of his client. Differences between the satisfaction levels on the two other items listed in this section, readability of microfiche copies, and availability of microfiche readers, are not statistically significant and are of low practical significance, 2.5 to 2.1 and 2.8 to 2.4, respectively.

The final stage of the search process as assessed by the User Evaluation Questionnaire refers to the Value of the Search Output. The output referred to consists of two separate products, the bibliography and the original materials ordered, if any, which might be either copies of journal articles or microfiche duplicates of ERIC documents or a combination of the two. The mean satisfaction levels for EIC and non-EIC users with the value of the bibliography (2.2 and 2.3) and the value of materials (2.5 and 2.2) are so close that the differences are of no statistical or practical significance.

Conclusion

It would appear that there is a slight tendency for EIC users to be more satisfied with some aspects of the automated bibliographic retrieval service than non-EIC users. These areas of greater mean satisfaction focus on the publicity about and directions for using the service and the quality of the technology. EIC users are less satisfied than their non-EIC counterparts with those aspects of the service that add another step to the ordering process and therefore slows down their receipt of the information. This suggests that the EICs role might be most useful in the preliminary stages of raising awareness and providing directions for using the service. It would appear that the intermediate stage of search negotiation might best be left to the search analyst and the ordering of materials to the user. In that way, maximum use might be made of the local availability of the EIC, the technical expertise of the analyst, and the enthusiastic need of the user for a more speedy delivery time.

CHAPTER 4

THE NEGOTIATION PROCESS IN ONLINE BIBLIOGRAPHIC RETRIEVAL

One of the most important aspects of online search services is the negotiation process that takes place between the librarian or search analyst and the user seeking information. For it is during that encounter that the user must make his needs known, the search analyst must comprehend the request, and translate it into the terminology and configuration that will result in the successful retrieval of appropriate citations. Yet little has been written that attempts to analyze what happens during the negotiation process. The purposes of this chapter, therefore, are to review the literature relevant to the negotiation process, to identify the major elements of that process as outlined in the literature, to apply these theoretical components to actual negotiation interviews and ascertain their applicability thereto, and to develop a model that describes the component elements of the negotiation process. The development of such a model is seen as having implications for the training and performance of search analysts and therefore contributing to the improvement of automated search services.

Review of the Literature

Though online services have now been in existence for more than a decade and their growth and evaluation have become the subject of scholarly attention (Fry, 1972; Wanger *et al.*, 1976), a recent survey of library science publications has shown that little has been written on the negotiation process between the user seeking information and the search analyst working at the computer terminal. While this newer field has remained unexplored, however, there exists an abundant literature dealing with the more traditional form of the user/analyst interface, the classic reference interview. That literature treats as its major concerns empathy and non-verbal behaviour; the interview process itself, including its structure, and the thought processes involved in the negotiation and formulation of questions; the examination of the establishment and enactment of roles by the participants, and other factors which affect the interaction between the reference librarian and the user. It is to these areas that we now turn for the insight they can lend to the online negotiation process.

Empathy and Non-Verbal Behaviour

Both Peck (1975) and Pierce (1971) have taken the view that there is a strong affinity between the interviews that are part of reference services and those that are integral to therapy and counselling. They feel, therefore, that an awareness of the techniques employed by counsellors would be beneficial to librarians in enabling them to improve their services. One such technique is empathy. Peck quotes Delaney and Eisenberg, who describe empathy as:

> . . . the counselor's ability to understand how the client feels at any given moment in the counseling process and how he feels about the situations he is describing to the counselor. Empathy also refers to the ability of the counselor to respond to the client so as to communicate that the nature and intensity of the emotion experienced is understood by the counselor (Peck, 1975, p. 233).

Applying this to the reference librarian, Peck suggests that empathy can be shown to have effects in numerous ways: the demeanour of the librarian at the initial interview can reduce the anxiety of the user; maintaining eye contact, smiling, expressing concern can diminish nervousness; practising a relaxed, slightly forward-leaning body position can reflect interest. Other non-verbal behaviour such as nodding the head or gesturing with the hands can indicate awareness and attention.

Pierce adds another dimension to Peck's article by suggesting that

> . . . the importance of empathy does not depend exclusively on the empathic ability of the therapist, but also on the perception of empathy by the client (Pierce, 1971, p. 120).

Using sixty male volunteers enrolled in an undergraduate course in psychology at the Ohio State University, he carried out an experiment to test the relationship between anxiety and perceived empathy. He subjected the students to what he termed an "Appropriate Timing Interview" (where the interviewer attempted to respond appropriately to the students with a statement, did not interrupt the student or allow more than five seconds to elapse), and an "Inappropriate Timing Interview." The latter was dividied into three periods: the first period of two minutes was similar to the "Appropriate Timing Interview;" the second was marked by interviewer interruptions with a statement every five seconds for five minutes; in the third period (five to eight minutes), the interviewer did not respond to the student for a fixed period of twelve seconds after the last utterance of the student. Pierce found that although the timing of statements was not a variable, there was an inverse relationship between anxiety generated by the "Inappropriate Timing Interview" and perceived empathy. The implication for reference librarians is that perceived empathy would lead to greater user satisfaction with and an improvement of the library's services.

In a somewhat similar experiment reported in detail, Matarazzo and Wiens (1967) hypothesized (and validated with reported p values of .001) that if the interviewer waited longer (or shorter) than usual before responding to the user's last comment, the effect would be an increase (or decrease) in the user's own reaction time to the interviewer. Citing other similar studies, they extrapolated that when the interviewer's "speech latency" (the reaction time before responding to the user's last utterance) was short, this, together with head nodding and saying "mm-hmm," acted as "social reinforcing stimuli" and led to the perception of a more positive attitude by the interviewer, and hence greater satisfaction on the part of the user with the interview.

In another experiment to test the effect of the quality of a reference librarian's immediate and non-immediate verbal-nonverbal communication on user satisfaction, Gothberg (1976) advanced three hypotheses: immediate rather than non-immediate verbal-nonverbal communication by the librarian would result in (1) greater user satisfaction with the reference interview, (2) greater satisfaction with his own performance in the negotiation of the reference question, and (3) greater user satisfaction with the transfer of information. Using the immediacy principle emerging from the investigations of Mehrabian and his co-workers, a measurement of the construct "satisfaction" used by Van Kaam, and an ANOVA computer program to analyze the data, she found that the first two hypotheses were supported by the results, but not the third. She suggests that more frequent immediate verbal-nonverbal communication will increase the level of the librarian's interpersonal functioning, ease the frustration users often encounter in their search for information, and hence increase their satisfaction with the library's services.

Boucher (1976) also indicates concern for the frustration experienced by library users and emphasizes the importance of nonverbal communication in alleviating this. She puts users into four basic categories: the *lost sheep*, the *irate patron*, the *habitual user*, and *confidence personified*, and suggests that librarians, instead of being in the "Preoccupation Mode" should find themselves in the "Availability Mode" more often if successful communication is to take place. She defines the two modes as follows

Preoccupation Mode	*Availability Mode*
Arms across chest	Arms relaxed, not covering up body
Downward gaze so no eye contact possible	Eyes ready to contact those who enter
Frown of concentration, firm mouth	Smile of greeting, relaxed mouth, eyebrows lifted in attention
Hands busy with books, paper, pencil, telephone	Hands relaxed
Turned or leaning away, head bent down	Leaning forward, head up
Behind desk	Willingness to leave desk

To contact and inform the user successfully, the reference librarian needs to be skilled in the art of communication, the nonverbal aspect of which, though extremely important, is often overlooked.

Structure of Negotiation

Although very early in her article Boucher does make mention of the tripartite nature of the negotiation process itself -- it begins with an *acknowledgement*, moves into *interaction*, and concludes with an *informal closure* -- she does not develop this perspective in her article. Gothberg (1973), however, convinced that the negotiation of the reference question is one of the major problems in library communication, believes that the solution lies in an examination of the nature of the interpersonal process, particularly from the perspective of Martin Buber. Turning to his view of the importance of interpersonal relationships, after an examination of the literature in linguistics, kinesic research, and information and transactional theories, she notes that "a few things stand out": the attitudes and feelings of the helping person are more important than his procedures or techniques, and the way in which his attitude and feelings are perceived makes the crucial difference. Taylor (1967) is then cited as finding, in his review of studies done, that ease of access to information is more important to the searcher than the quality of that information.

Taylor (1967) in considering the negotiation process, states his concern with two phases of this interface between library system and library user and has advocated a more dynamic (inquiry-oriented) rather than a static (object-oriented) approach to the structuring of the interview. He suggests that with regard to the first phase, it is crucial to attempt to understand what a question is, and identifies four levels or stages of question formulation. He however cautions that these levels are not separate, but overlap and should be thought of only as convenient points along a continuum. The levels are (1) the actual but unexpressed need for information (the *visceral* need); (2) the conscious, within-brained description of the need (the *conscious* need); (3) the formal statement of the need (the *formalized* need); (4) the question as presented to the information system (the *compromised* need).

> Unless the inquirer knows the information specialist well, he is inclined to pose his first question in positive and well-defined terms, even to the point of specifying a particular package [level 4]. . . . The skill of the reference librarian is to work with the inquirer back to the formalised need [level 3], possibly even to the conscious need [level 2], and then to translate these needs into a useful search strategy (Taylor, 1967, p. 9).

The second phase of the process of negotiating the question is the identification of the "filters" through which a question passes. From interviews with librarians and information specialists, Taylor pinpoints five: (1) subject definition; (2) objective and motivation of the user; (3) personal characteristics of the user; (4) relationship of inquiry description to file organization; (5) anticipated or acceptable answers.

The first "filter" is concerned with provided the librarian with a general delineation of the subject area of inquiry through feedback; the second, which most librarians felt was crucial to the success of any negotiation and consequent search, stems from the observed fact that while users often cannot define *what* they want, they can discuss *why* they need it. This stage further qualifies the subject and helps the user and librarian formulate a better understanding and clarification of the user's need. The third, the personal background of the inquirer, according to Taylor,

> . . . may well determine the urgency, the strategy of the negotiation, the level of any dialogue and the critical acceptance of search results (*Ibid.* p. 14).

In short, it is the context and environment of the entire process. Then, the reference librarian translates, interprets, and restructures the question so that it fits the files as they are organized in the library system. Finally, the user can be made aware of the capabilities of both the librarian and the system, adjust his search strategy in the process, place limits of time and size on his inquiry and possibly alter his expectations of acceptable answers.

Taylor sets out to show that the negotiation process, in its best form, is structured and can be analyzed. Once the structural elements are understood, they can be isolated (and even further broken down) for fruitful analysis and the eventual improvement of reference librarians and information specialists. This would lead to a better understanding of their role and therefore greater efficiency and effectiveness in serving their various publics.

Open and Closed Questions

Neill (1975) claims that although there is a fairly accurate notion of *what* happens during the reference process, there is little idea of *how* it happens. He suggests that a knowledge of the thought processes involved in recognizing types of questions being asked, in formulating search strategies, and in selecting the kind of answers required in reference work is needed to improve the teaching and practice of reference service. One model that he feel parallels this process is Guilford's Intellect Model.

An integral part of this model is convergent and divergent thought production, "the operations most relevant to the reference process" (p. 310). In convergent production operations, logical *necessities* are generated from given information, and in divergent production operations, logical *possibilities*. "The crucial differentiation of the two kinds of operation is that the kind of response is completely specified in convergent production and not in divergent production" (p. 313). Fluency, flexibility, originality, and the ability to elaborate detail are abilities associated with the former, while the drawing of deductions that are logically tight from given information (the deductions are essentially uniquely determined by the given information) characterize convergent production ability. The reference librarian must be able to engage in both forms and must therefore be aware of the thought processes involved to emerge with a better definition of the problem.

In concrete, operational terms these two types of thinking are what King (1972) has categorized as "open" and "closed" questions. She advocates that the understanding of the user's request and the supplying of the information required would be immensely facilitated by a more pronounced use of one technique -- the use of the "open" question.

> Questions are open when the response is left up to the respondent; when they cannot be answered "yes" or "no". Example: "What is it that you want to know about soft contact lenses?"
>
> Questions are closed when the respondent does not have a choice in his response other than those provided by the questioner. Two general types of closed questions are those which may be answered "yes" or "no" and those which are forced-choice. Examples: "Do you want a biography?" (yes or no). "Do you want books or information?" (forced choice: books or information) (King, 1972, p. 158).

Words that preface "open" questions are: "what, when, how, who, where," but the most important is "why." For "closed" questions, "the tools of cross-examination," "is, do, can, will" are usually the words at the beginning of the question. On the major assumption that good reference librarians have to be good interviewers, the "open" question, which encourages the user to talk and allows him rather than the librarian to shape the request, is of prime importance to the successful conduct of the negotiation interview.

Role and Status Relationships

The importance of understanding the part roles play in the communication process is another area that has received some attention. Gothberg (1973) states than in "an organisation such as a library, there exists a structure of roles tied together by lines of communication" (p. 13) and laments the fact that the present situation is one in which neither the role of the library nor that of the librarian is clearly defined. This results in role conflict when the incumbent is not able to fulfill role expectations realistically, is unhappy with his image of the role, or with his perceived image of himself in that role.

This view also finds support in Shosid (1974) and Horn (1974). These authors take the position that neither the librarian nor the client know what to expect from each other. As a result of the confusion of their precise roles, librarians have often resorted to conceptions of users as "patrons," and therefore patronise them, giving them what they want regardless of other issues involved.

According to Shosid (1974) this confusion is fostered by the open-endedness and unscheduled nature of the reference encounter, the lack of control on the part of the librarian, and the concomitant need to establish relative status. The author claims that the reference librarian is thus placed in a situation which Goffman describes as leaving

> . . . the performer in a position of not knowing what character he will have to project from one moment to the next, making it difficult for him to effect a dramaturgical success in any one of them (Shosid, 1974, p. 220).

Shosid also suggests that the sex of the user is another variable in both status and deference patterns in the interaction. In short, misidentification and/or disagreement as to what the role is influences the judgement of the user regarding the librarian's adequacy, his own satisfaction, and his decision to use the service in the future.

The ambiguity of the situation in which the reference librarian and user find themselves is also intensified by the disparate and often competing combination of functions that comprise a reference service. These include the demand for reports and statistics by the administration who tend to think of the organization of a library as if it were only open during normal working hours (Horn, 1974); the amount of time available to "negotiate" the request; and, most important, the lack of objective measures to judge effective service, both by the user who tends to judge it by the relative status established during the interview, and the reference librarian, who often receives no feedback whatever on the effectiveness of the service provided.

Summary

Although there is as yet a general lack of material treating the online negotiation process, there exists some literature that examines the traditional reference interview. The main areas that literature discusses have been considered here. These were nonverbal communication, the structure and thought processes which underlie the interviewing process, and the establishment and enactment of the roles of the participants. It remains for the following sections of this chapter to examine how adequately these areas describe the online negotiation process.

Design of the Study

There are basically two ways of generating understandings of what happens during a given process. One method is to use previous literature and concepts that others have developed to determine whether they explain what is going on. The other approach is to study the data to see if there are regularities in it that allow one to identify new ideas that perhaps others have not noted. On the one hand, the researcher is trying to see if pre-existing interpretations can illuminate or explain what is going on during a process. On the other, the research is attempting to generate new ideas or theories (Kerlinger, 1973; Glaser and Strauss, 1967). This study uses both methods on the assumption that different perspectives using different conceptualizations can lead to a better understanding of the process in question. Such an improved understanding, it is felt, will contribute to more effective training programs for search analysts and better negotiation interviews with users.

This study is mainly an exploratory one. It uses comparative analysis of negotiation interviews with different types of clients in order to maximize the variation between contrasting data. Negotiation interviews were dichotomized into academic and non-academic (see Table 23) representing the main roles of the clients of the Educational Information System for Ontario. These interviews were further categorized by the sex of the user, following suggestions in the literature that different relationships might occur with a given

TABLE 23

EISO USER SAMPLE SELECTION

Characteristics	Sample			
User Characteristics				
Type	New[†]		New[†]	
Role	Academic[§]		Non-Academic[¶]	
Sex	Male	Female	Male	Female
Category Name	A	B	C	D
File Characteristics				
Total number of files in each category	17	11	9	7
Number of files in each category containing all required information	9	6	3	2

[†] No complete data sets were available for repeat users.

[§] e.g., OISE

[¶] e.g., Government administration, school board member reference librarian because of the social identities of men and women. Although the total number of users in each of the four categories, male and female academics and non-academics, was 17, 11, 9, and 7, respectively, substantially fewer user files contained all the information needed (transcribed negotiation interviews, Search Request Forms, returned User Evaluation Questionnaires) for analysis. The final selection consisted of one randomly selected interview from each of the four categories of users for whom complete data was available.

Method of Analysis

In the review of the literature, major concepts relating to reference interviews were identified. It was felt that because negotiation interviews for online information retrieval could be considered similar in many ways to the more traditional type of interaction between librarian and user, and because little existed describing the online process, the literature treating the older topic could be applied with some justification to the more recent one.

Therefore, the first task undertaken was a review of the relevant literature to identify the major concepts that might be applicable. The areas that emerged were: empathy and nonverbal behaviour, the structure of the negotiation (including the use of open and closed questions), and role and status relationships. For these concepts, the method of analysis was a counting scheme to determine how frequently each was used in the EISO negotiation interviews. After the extent to which that variable occurred in the interviews was measured, an attempt was made to account for the different levels of occurrence.

Description of Findings

The Negotiation Interviews

User A

A Master of Arts' student in the Applied Psychology, User A approached the search analyst in the early stages of formulating a topic for his master's thesis. In answer to the search analyst's invitation to describe in general terms what his subject was about he responded:

> [†]U-A/R1: My study will involve children of low social and economic status. There will be two groups, one control and the other experimental. The experimental group will have low self-concept of ability. The control group will have high self-concept of ability.

At this point the search analyst makes her first interjection and the interview proceeds as follows:

> [§]SA/Q2: This is of their own ability generally?
>
> U-A/R2: Self-concept is how they see themselves in relation to the kids in class, smarter or dumber. My hypothesis is that the children with low self-concept of ability are more likely to perceive a distance on certain dimensions between themselves and the professionals they come in contact with than children with high self-concepts of ability.
>
> SA/Q3: They're more likely to be in awe of teachers and doctors and such?
>
> U-A/R3: They see a distance between themselves and professionals on certain dimensions. That's basically it.

Even from this brief excerpt, a number of things stand out. First, the analyst's primary task is to define what the user's search topic is about. She does this by asking a general, open, exploratory question which elicits an overview of the topic from the User (Response 1). The topic is a fairly specialized one and the search analyst must ask probing, *definitional* questions (Q2, Q3) to make sure that she knows what the main conceptual components of the topic are. Though the user may feel that he has done an adequate job of explanation and may even be prepared to terminate the interview soon after it has begin (see R3), the search analyst feels the need to probe further before planning her search. "Are you concerned with professionals other than teachers?" (Q4) she asks. "Are you making up your own scale or using one that already exists?" (Q5) she continues. She determines from his answers that he is interested in doctors and lawyers as well as teachers and that he will be using a self-anchoring scale first used by Kilpatrick (R4 and R5). The analyst queries the meaning of a "self-anchoring" scale (Q6). The user explains:

[†] User A, Response 1

[§] Search Analyst, Question 2

> U-A/R6: What I'm going to do is ask the child to think about who for her is on the top end of the scale on the dimension and who is on the bottom end. Then she is given people, including herself, whom she is to place on the scale so that eventually I'll find out where the child sees herself in relation to the professional.

At this point, the search analyst reiterates the topic in her own words and begins to thumb through the thesaurus of terms used in *Psychological Abstracts* looking for appropriate descriptors. As she does so, she seeks confirmation or rejection of her choices through a series of closed questions. She also begins to explain her choice of *Psychological Abstracts* as the data base she will search, describing its features and those of automated searching in general. As she proceeds to identify synonymous terms for the major concepts that comprise the topic and suggests these to the user, the user continues to delve with growing specificity into his topic describing the research design he proposes to use and the techniques he will employ for analyzing his data. This increasing detail and exactitude prompts the analyst to inquire whether the user would be interested in longitudinal or follow-up studies. Further narrowing of terms takes place through another series of closed questions. The search analyst, feeling that she is coming to grips with the topic, spends an increasing amount of time explaining the logic of search strategies and the formats in which descriptors may be entered at the terminal. She prefaces some of her remarks by emphasizing the limitations of the system. "Connections between the concepts you ask for are very hard to specify, so you may get a lot of odd references." The interview concludes with the search analyst telling the user when the search will be run and when he may expect to receive his bibliography.

From her interview with the user, the analyst constructed a search strategy the next day that combined synonymous terms for the topic's main ideas. The major concepts included were "self-concept," "ranked selves," "described selves," "ability," "career," "professionals," "stereotypes," and "role." In all, ninety-one search statements were needed to adequately refine the topic. At the end of a week the user received a bibliography containing 136 citations. He found much of the material interesting but not relevant. Nevertheless, the user expressed high satisfaction with the search analyst and the forty-minute negotiation interview he had had with her.

User B

The second interview to be discussed lasted approximately nine minutes. It began in a similar fashion to the first with open questions eliciting the general nature of the information request:

SA/Q1: What is your topic about?

U-B/R1: It has to do with library services in elementary schools. What I'm looking for is: What does research say about the influences of library practices related to the number of books read by kids?

SA/Q2: What sort of practices did you have in mind?

U-B/R2: Well, at one time I heard a speaker from the University refer to a study, or three studies it might have been. In one case the kids went to the central library to pick up books; in another case the teachers brought the books back to the rooms and left them for kids to take out; in the third case, the one that intrigues me, the teachers brought the books to the room, created displays, and gave book talks. As I recall, this last case resulted in more kids actually reading.

This is really related to the negotiations with our school board. The elementary teachers want to negotiate to have librarians designated above ratio for the school's allocation of staff and I'm really trying to find out whether we need school librarians and what alternative practices we might consider.

SA/Q3: So you're looking for a way that money could be saved and work distributed and still produce positive results?

U-B/R3: That's right.

The content and reason for the search having been arrived at fairly quickly, the weight of the dialogue now shifts to the search analyst who launches into a description of the system. Again, she cautions the user about its capabilities.

SA: It's going to be hard to get at the notion of taking books to the classroom. I don't think there are descriptors for that. [She searches through the *Thesaurus of ERIC Descriptors*.] I'll show you what I'm looking through

There follows a detailed explanation of the use of descriptors in formulating search strategies.

A lesson in Boolean logic is followed by a rapid exchange of closed questions and answers in which the search analyst has the user thumb the *Thesaurus* to suggest descriptors that describe the main concepts of his topic. She confirms his choice or suggests new terms.

U-B: Here we go with "elementary school."

SA: That would be a good term probably.

U-B: "Library programs?" "Library role?"

SA: Yes. "Library circulation is a good one too, I think. We're not going to find one that's perfect, but we can put down ones that look useful.

U-B: There's "school libraries."

SA: Sounds likely, but "elementary school libraries" might be better.

U-B: How about "library instruction?"

SA: That would go more with the idea of a central library I think. If it was done in the classroom and the teacher was the main person in charge, there probably wouldn't really be anything major enough to be called "instruction."

Having exhausted the library-related concept, the interview turns to the definition of staff "designated above ratio." With that defined, the search analyst draws the interview to a close by referring briefly to the cost of the search and assuring the user she will do her utmost to see he gets his money's worth.

From the information gained in the interview the search analyst created a search strategy that retrieved 44 citations. The user rated his satisfaction with the interview, the bibliography, and the original documents he ordered as high and appended an additional complimentary note to his returned evaluation questionnaire.

User C

SA: Could you tell me something about the topic you're interested in?

U-C: Basically, I want to know about computer assisted instruction.

SA: Okay.

U-C: The success or failure of it.

SA: When we made this appointment you said that the foundation you are with is for the physically handicapped. Is that right?

U-C: Yeah. It's mainly for cerebral palsied children.

SA: Uh-huh.

U-C: Non-verbal kids.

SA: Right. Would you also be interested in information dealing with normal kids?

U-C: Sure. But if there's anything on brain-damaged kids, that would be better.

SA: Fine.

U-C: Basically, what we're thinking of doing is teaching kids to learn their symbols by computer program. What I'd like to know is if, in fact, I can say that computerized teaching is an improvement over other kinds of teaching.

SA: Uh-huh.

U-C: I need evidence to support their going into using computers to teach these kids.

SA: I see.

U-C: The cost is the major problem. They can always ask why a workbook or a teacher with a blackboard wouldn't be just as useful.

SA: Maybe you could tell me a little more about this symbol system that's being taught.

So began an interview dealing with the relative strengths and weaknesses of using computer-assisted instruction for teaching symbolic language to childred affected by cerebral palsy.

After determining the general nature of the topic, the search analyst examined each of the major concepts in turn -- symbolic language, computer-assisted instruction, neurologically handicapped -- finding synonymous terms for each, expanding and contracting the scope of the concepts. The following excerpt is illustrative:

SA: As an addition to the terms that have "computer" in them, we could ask for stuff on programmed instruction.

U-C: Yeah.

SA: It doesn't have to be just computer assisted, does it?

U-C: No, that's the same thing too. In fact that would be a good choice, actually.

SA: As a second choice or an acceptable alternative, perhaps.

U-C: Maybe we could get that with reference to brain damanged kids.

SA: Yeah. We could ask for this type of system or this type of kid and then if we get a small number [of citations] back, we can broaden computer-assisted instruction by adding programmed instruction.

U-C: Uh-huh.

SA: Now let's take a look and see if there is anything [in the *Thesaurus*] on types of symbol systems.

After checking through the *Thesaurus* and a dictionary, the search analyst hits upon the term "ideography." Other synonymous terms are sought but very few found. She next turns to exploring the concept "computer-assisted instruction."

SA: There's going to be a whole lot of terms here, I think. It's even possible that I might well wind up, instead of looking through descriptors only, just saying that the document has to have the word "computer" or the stem "computer" somewhere in it, either in the abstract or the title or the descriptors. That'll get us a huge set.

U-C: Yeah.

SA: With "programmed" I can't use the stem "program." It's too broad. I would have to say "programmed" or "programming."

U-C: Yeah.

SA: I'll also use "teaching machines" -- that usually indicates something close enough. Maybe I might even go so far as to put in things like "educational technology."

U-C: What would that do?

SA: It would get any kind of gadget or gimmick, like teaching machines.

U-C: Oh, really?

SA: I think so.

U-C: Well, put it in because that might be part of the computer.

The analyst draws this part of the interview to a close by assuring the user that she will examine the *Thesaurus* for more related terms when she is alone. She now shifts attention to examining the concept of "brain damaged."

SA: I know "cerebral palsy" is your first choice. But there are a lot of other terms that refer to other kinds of brain damage. Maybe we'd better look up some of those.

U-C: Yeah.

SA: They use "perceptually handicapped."

U-C: With normal kids it's okay too.

SA: That would mean, in effect, that we can if necessary just leave out this cluster.

There follows an explanation of how a search strategy will probably be constructed before the analyst returns to probing the meaning of the third concept.

SA: I think I was asking you about some of the terms related to "brain damaged." They have "neurologically handicapped," *and* "perceptually handicapped." Those are too mild, aren't they? Or are they?

U-C: No, not really.

SA: Okay. I'll put them down. They may get you as many as 150 citations. Would you like to see what form you get them in?

U-C: Sure.

The analyst uses sample bibliographies to demonstrate the various formats for journal and document citations as well as different indexes. She next explains the charging system and with the user's encouragement decides to search the ERIC, *Exceptional Child Education Abstracts*, and *Psychological Abstracts* data bases:

SA: If I search more than one data base, it'll probably cost you more than $30. Do you think that's okay?

U-C: Yeah. That's okay.

SA: It could be as much as $50 or $60.

U-C: That's okay. I think it's worth it.

Though the interview, which had already lasted twenty-eight minutes, could very well have concluded here, it goes on for another five minutes as the analyst recapitulates her search strategy and, having exhausted the *ERIC Thesaurus*, turns to *Psychological Abstracts*. Having differentiated between the terms used in the various indexes, the search analyst terminates the interview by informing the user when she may expect her search to be run and her offline printouts mailed to her. Two weeks following the interview, the user received a bibliography of 155 citations, most of which she felt were relevant.

User D

The fourth request was a relatively straightforward one submitted by an M.A. student working on her thesis.

U-D: I want to do a study to see the effects of various televison shows on pro-social behaviour and I'm going to use altruism as my measure.

What I'll be doing is showing several different types of shows to kids, aggressive shows, positive shows, and then have them carry out an altruistic task and see if the show has affected them.

SA: I think that kind of thing shouldn't be too hard to find because there are some very specific words. You're interested mainly in television shows, are you?

U-D: Yes.

SA: As opposed to movies or radio?

U-D: Yes.

SA: Okay. Now "aggression" or "violence" -- those are quite specific, too. They won't be too hard to get at. On some topics, you know, you do so much typing and it takes so long that if you search two data bases, it costs more than $30. But I don't think this one will. I'm not even certain that it would be necessary to search ERIC. It sounds more like *Psych Abstracts* to me.

U-D: It should all be in psych journals, yes.

SA: I'll just get out my *Psych Abstracts* thesaurus, but I think this is a topic where we won't need a thesaurus too much. Now, just while you're here, I'll use you to get all the possible synonyms because you're the one who's familiar with the literature. "Aggression" and "violence" are two possibilities. What about things like "anti-social"?

U-D: Yes, because one of the shows will be that.

SA: "Hostile," "hostility"?

U-D: Uh-huh.

SA: If you happen, as we're going along, to think of a few more synonyms, just interrupt and I'll write them down. Now we'll put down "television" or "radio." I'll also put down "TV" in case somebody's called it that. You're not really interested in movies or books?

There follows some discussion about the inclusion or exclusion of other media such as film, whether or not "children" should be included as a separate descriptor set, and methods of getting at the concept of altruism. Defining the latter presents the search analyst with some difficulty and she asks the user to describe the kind of situation to which the children will be asked to respond.

> U-D: What the kids have to do is bowl on an electric pre-set game. They win a certain number of tokens and they are given the opportunity to share their tokens with the poster of a hungry little boy up on the wall. They are told that if they share with Bobby, he's going to get some toys.

This elaboration prompts the analyst to suggest "sharing," "altruism," "cooperative," and "donating" as likely synonymous descriptors. She explains that the use of too many such terms, however, might pose unnecessary restrictions. The user at this point reminds the analyst that she is just as interested in the effect of positive shows on children as negative ones. They discuss various approaches that might be taken to get at this information and the analyst cautions her about being too specific.

> SA: Whenever I'm doing something for someone that's doing a dissertation or thesis, I feel obliged to warn them that the very same behaviour that you have to engage in to refine and narrow your thesis topic makes it increasingly difficult for the search to come up with anything. Almost all the stuff we find will be tangential or peripheral. Some people are very disappointed. They want their topic to be unique but on the other hand, they want to get a lot of things that are similar. It's kind of hard to have it both ways.

She concludes by saying that she will probably use just the TV and altruism concepts to start and alter the strategy afterwards, if need be. The user is shown a sample bibliography to become familiar with the format of the printout, and the interview ends. Two days later, fifty-seven citations from the *Psychological Abstracts* data base were sent to the user.

Empathy and Non-Verbal Behaviour

Earlier, several conceptualizations of the negotiation interview were identified. In this section, these concepts will be applied to the preceding interviews to determine their "closeness of fit." Subsequently, in the discussion section, another view of the process will be offered.

It is recognized that the absence of videotapes imposes some limitations on the ability to fully capture the nuances of facial expression, the position of the hands and body of the search analyst, and to identify all exhibited aspects of nonverbal behaviour which the search analyst makes use of to promote empathy with the user. The use of tape-recordings do, however, make it possible to identify one category of empathetic behaviour, the use of verbal and nonverbal expressions "said in a warm, accepting and understanding manner and . . . selected to fit the context of the interview" (Pierce, 1971). A sample of the interviewer statements were: "Uh-hmm," repetiton of the user's last statement, "You feel that [last statement said]," and confirming statements such as "Yes, that seems to make sense." Matarazzo and Wiens (1967), also in the discussion of the results of their experiment, note that interviewer behaviour such as "Mm-hmm"

> . . . is interpreted by the interviewee as indicating that the interviewer is more interested in, or more empathic toward, the interviewee . . . [and] these interviewer tactics may be functioning as social reinforcing stimuli.

Other forms of empathic behaviour include humour, and statements such as "Okay," "Uh-huh," "Really," and "Oh, I see." A further implication is that this form of behaviour encourages the user to relax and talk freely, rather than withdraw into uncomfortable monotonic responses. Encouraging the user to talk solicits information about his topic of instrest which is crucial to the understanding of his problem. Only if this first step is completed successfully, can the search analyst move on to the next stage of attempting to interpret the problem in terms of descriptors on the system.

A particularly good example of this is demonstrated by the first four minutes (six transcript pages) of the interview with User C who requires information on the use of computer-assisted instruction in teaching symbolic language to children affected by cerebral palsy. Here the user does almost all the talking for the first four minutes, punctuated only by the search analyst's "Okay," "Uh-huh," "Fine," "I see," the statement "Maybe you could tell me a little more about this symbol system that's being taught," and two brief questions about the type of foundation where the user works and whether she wants information on normal as well as cerebral palsied children.

In fact, approximately one-third of the empathic comments (twenty-three out of a total of seventy-three) occurred during the first four minutes of this thirty-three minute interview. In the interview with User B, lasting only nine minutes, out of a total of twenty-eight such comments by the search analyst, fourteen occurred during the first two minutes of the interview, and with User A almost one-quarter of such comments (twenty-one out of a total of ninety) occurred during the first five minutes of the forty-minute interview. In the interview with User D, although there were forty such comments in only twenty-one minutes, only five occurred in the first few minutes, the reason being that the search analyst immediately understood the user's topic and proceeded quickly to the next stage of identifying the major descriptors.

As can be seen, most of the search analyst's empathic comments relative to the total of such comments uttered during the entire interview occur during the opening minutes of the interview when it is vital that the user be at ease and talk about his topic of interest as fully as possible. This undoubtedly will also influence user satisfaction with the service generally, and his decision as to whether he will use the service again and/or favourably recommend it to his colleagues and friends.

The Structure of Negotiation

Even the brief descriptions of the four interviews presented confirm the underlying five-stage pattern or structure that is suggested by the literature.

Stage One

The first stage revolves around the analyst's attempt to clearly understand the user's request. This seems to be a most critical stage, for only after its successful completion can the search analyst move to the second stage. The length of the first stage depends on how clearly the user has identified and defined his topic in his own mind, the complexity or uniqueness of the topic itself (*cf.* User A) and how articulate the users are (*cf.* Users B and C) in explaining their need to the analyst. The degree of user articulation in this study tends to be quite high, since users are generally either master's or doctoral students, professors, government administrators, or members of school boards. In this stage also, users may be given a general outline or description (or may even ask for such) of how the system works. This tends to provide some preliminary even if limited understanding of the relationship between the terms (descriptors) and how access to the system is obtained, and seems a valuable prelude in later helping to identify descriptors and key phrases.

Stage Two

The second stage involves an effort to identify the major areas of the user's topic of interest and to match these with major descriptors or phrases which will provide access to the data base(s). With the first stage over, the second proceeds fairly rapidly. Since all the users are educators of one sort or another, the terminology used tends to be limited, allowing the search analyst to build up familiarity with the language of the discipline. In most instances, relevant tools such as the *Thesaurus of ERIC Descriptors* located on the analyst's desk is consulted by the user and analyst during their interview.

Stage Three

Next comes the identification of terms *related to* the major descriptors. In this stage an attempt is usually made to broaden and extend as much as possible the topic first presented by the user. In this stage a list of very specific words (descriptors) is identified. This process may be a fairly lengthy one and with the possible exception of the first stage, may take the most time during the interview.

Stage Four

During stage four, the search analyst outlines the main and alternate strategies she will use in the search, and ranks and/or combines the related terms with the major descriptors/headings. This stage usually acts as a further clarification of the topic and the aspects of it that are most important, and the user is asked to further extend, change, or modify the terms as necessary.

Stage Five

The closing stage is usually devoted to "housekeeping information" when the user's address and billing instructions are obtained and he is told how much material to expect, when, and how much it is likely to cost.

It should be noted that while Stage One usually occurs at the beginning of the interview situation, the remaining stages do not necessarily follow sequentially in the order presented above. For example, an indication of what the user can expect in terms of the volume of material, may occur immediately after the first stage (*cf.* User A) or the search analyst may proceed to identify related terms during the first stage in an attempt to understand the topic more clearly (especially if it is a complex or unique one) before making an attempt to specify and list major headings. In spite of variations, however, the basic underlying pattern above tends to persist.

Open and Closed Questions

The distribution of "open" and "closed" questions asked by the search analyst in the four interviews appears below:

TABLE 24

OPEN AND CLOSED QUESTIONS ASKED IN INTERVIEWS WITH USERS A, B, C, AND D

User	Open Questions	Closed Questions	Length of Interview
A	13	43	40 minutes
B	7	9	9 minutes
C	9	27	33 minutes
D	4	18	21 minutes

In King's opinion (1972), the frequent use of the open question encourages the user to talk and therefore allows him to shape his request. It would be expected, therefore, that more "open" questions would occur in the opening minutes of each interview when the user must explain his request. There seems to be good support for this contention in the four interviews being considered here. In the interview with User C more than one-half of the open questions (five out of nine) were asked in the first four minutes of the interview; in User D's interview, one-half of the total of such questions (two out of four) occurred in the first seven minutes; and almost one-half of those found in the interview with User B (three out of seven) occurred within the first two minutes. The exception was the interview with User A, where, in the first five minutes, only one out of a total of thirteen open questions appeared.

The reason for the lack of such questions at the beginning of the interview with User A seems to lie in the search analyst's attempt to pin the user down to specific terms very early in the interview, as, having begun the interview with an open question, she received the indication that the user's topic was an unusual one for which there were few applicable descriptors on the system. Continuing to describe his topic in general terms, therefore, would be of little use. In contrast, the lack of open questions on the whole in the interview with User D (there were only four) seems to occur because, from the user's first explanatory statement, the search analyst was able to say "I think that kind of thing wouldn't be too hard to find . . . actually, because there are some very specific words" and began to ask closed questions in order to obtain a specific list of descriptors.

It may be observed that the EISO search analyst spends the greater part of an interview asking about specific terms, suggesting particular descriptors from the *Thesaurus of ERIC Descriptors*, explaining to the user what they mean, and indicating how she will combine them in the search strategy. Because of this need, then, for a listing of specific headings and specific combinations of major and related descriptors, the search analyst's use of the closed questions dominates the interview after the opening few minutes. A brief look at the distribution above of the types of questions will indicate the following: User A was asked more than three times as many closed as open questions; User C, exactly three times as many; and User D, more than four times as many closed as open questions for the duration of the interview. In brief, both the open and the closed questions have their importance during the negotiation process -- the former when *a general understanding* of the topic as a whole is required at the beginning of the interview and when this form of understanding of a section of the topic is required later in the interview; the latter when, the topic having been understood, *a specific list of major and related descriptors* are required to gain access to the system in order to retrieve requested material.

Role and Status Relationships

With regard to the question of role relationships, the situation in which the EISO search analyst finds herself is in many ways different from that of a reference librarian. While the latter may find the interviews unscheduled and open-ended, the search analyst often makes an appointment with the user beforehand, and many times has at least some prior knowledge of the user's topic. Further, while lack of time and the competing attention of other users may be variables in the library situation, prior appointment and the fact that the EISO office is located in a separate room in the library of The Ontario Institute for Studies in Education, effectively eliminate these difficulties.

In fact, the difficulties mentioned in the review of the literature on the library/library-user interface, the disparate functions of reference (which is not a quiet activity) that annoy the quiet reader, the distance between the desk and the reference collection, the lack of objective measures to judge effective service, all of which affect the successful establishment of status and role relationships, are not present in the search analyst/user situation. The closed office ensures the search analyst's undivided attention; the "reference section" comprises the *Thesaurus of ERIC Descriptors* and other indexes that are always on the desk at which the interview takes place; and the search analyst is provided with some feedback on the efficiency and standard of her performance by means of evaluation questionnaires returned by users.

Initially, also, the sex of the user was presumed to be a variable in both status and deference patterns in the interaction. However, bearing in mind the limitations of a tape-recording, this factor was not found to affect these patterns. This finding has received further support from the results of a separate and independent inquiry of another researcher who conducted follow-up interviews with users of the EISO service which included the user group from which the four considered in this analysis were selected.

However, there can be one factor which may have an effect on raising the status of the search analyst *vis-à-vis* the user, which may result in a feeling of dependency on the part of the user, with added discomfort to the user, especially if he considers himself to be in a "high status" occupation. That is the perceived glamour associated with a new and sophisticated technology represented by the computer and the possible perception that "esoteric knowledge" is required by the search analyst to retrieve necessary materials from such a system.

Yet, there seem to be several factors which preclude this possibility. First, the fact of a prior appointment seems to set a professional tone to the interview. Second, while the reference librarian/user interaction is free of charge, this does not apply to the EISO service. The user would therefore tend not to regard the search analyst as doing him a favour, but as entering into a business transaction with him, and, as such giving him the right to expect certain acceptable standards of service. Third, it was consistently found that the search analyst, during the interview, not only attempted to explain how the system worked (in fact users themselves often ask about this), but also discussed with the user major and alternate strategies that she would use *in terms of the system*, to attempt to retrieve what the user requested. This tended towards a reduction of the feeling in the user (if it existed at all) of the power of the search analyst's "esoteric knowledge." It is worth noting that the majority of new EISO users (83% from previous research) report learning something about the EISO system itself after the interview. The four users in this study who had completed and returned their User Evaluation Questionnaires reported that they had learned "a great deal" about the EISO system and how it works.

While there was no role difference in clients of different sexes, there was a difference that appeared between academic and non-academic clients. The two academic clients, both of whom were by chance master's students in psychology, stated their questions in terms of formal research designs. The first wanted to control for socio-economic conditions by having only children of low status, but had identified both experimental and control groups. Members of the first were to have low self-concept of ability and the second high self-concept; the dependent variable was perceived social distance from groups of professionals.

The second master's student also had identified an experimental variable -- types of TV shows -- and a dependent variable -- altruism as a measure of pro-social behaviour.

In contrast, the questions of the two non-academics were more open-ended. One wished to know about the role school librarians and children's reading habits; the other about computer-assisted instruction for teaching brain-damaged children a mode of symbolic communication.

It is our feeling that the rather rigid definition of the problem statement in the interview with User A may have contributed to the large number of questions and failure of the bibliography to provide highly relevant material, given that the search analyst was not familiar with the line of research in which the client was engaged. Even at the end of the interview, it is questionable whether this was clear to her. In contrast, although the topic in the interview with User D was stated in almost as rigid experimental terms as the first, the search analyst immediately understood the topic, and conducted a brief and successful search.

This contrast suggests that academic users may tend to state questions in a relatively formalized manner that makes inquiry on the part of the search analyst difficult if she is not equally familiar with the paradigm and concepts underlying the question. At the same time, the conventions of the problem statement may tend to obscure what is in fact a poorly-defined question on the part of the user, giving the question the appearance of a validity that it in fact lacks. Non-academic users have no such masque for their confusion; if their question is still at the visceral rather than the cognitive stage, it will be evident.

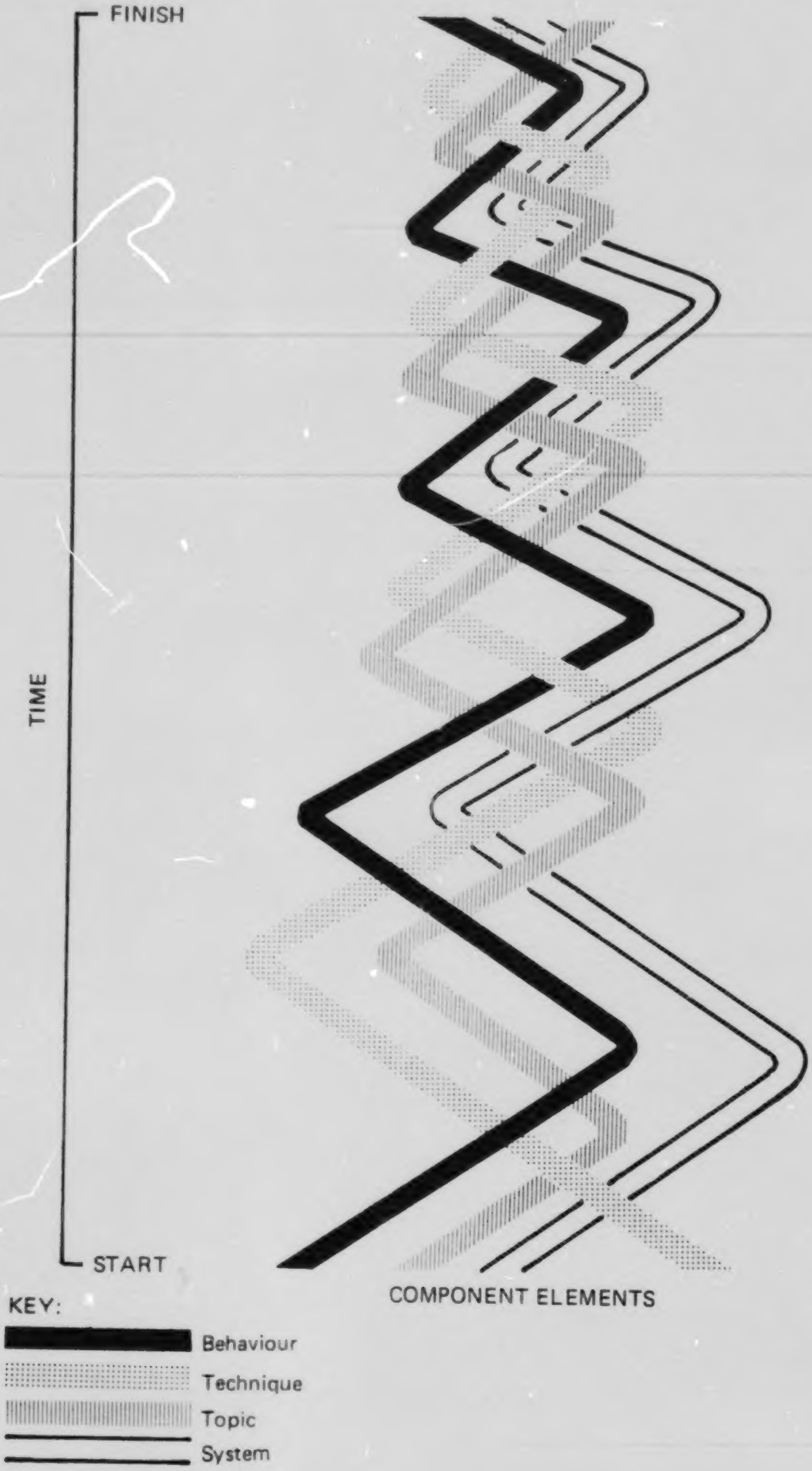
Developing a Preliminary Model of the Negotiation Process

While recognizing the danger of trying to generalize outward from a small sample of interviews, a number of points nevertheless are suggestive. First, that some of the issues raised in the literature on the traditional reference interview are also helpful in studying online negotiation processes. The aspects that hold most relevance seem to be those associated with empathy and non-verbal behaviour, the structure of the negotiation, and the use of open and closed questions. The one aspect that does not seem to bear much relevance is that related to role and status relationships. Second, these elements seem to be constant at least in some degree regardless of the nature of the topic, the user, or the system used. Such an observation leads one to the notion that it may be possible to represent these stable elements by constructing a model. Such a preliminary attempt to visualize the negotiation process is presented in Figure 2.

From the analysis of the interviews, it became clear that the negotiation process is not a rigid progression with a clearly defined beginning, middle, and end that inexorably follow upon each other but rather it has a more iterative, repetitive nature as the determination of the specific requirement of the user emerges. It therefore could not be represented by a simple linear design but called for a more dynamic mode of representation. The notions of reiteration and dynamism brought to mind the model of the spiral curriculum in education and the double helix in molecular biology. The former incorporates the idea of returning to concepts already introduced to define and learn about them in greater detail -- a process the analyst uses as she moves from a general understanding of the user's topic to the more specific choice of descriptors and search strategies -- while the latter draws attention to the multiplicity of interwoven links that are both constant and different in all of nature. Obviously, close parallels cannot be drawn, but the notion of using spiralling strands seemed to combine continuously evolving specificity with dynamic interaction. Unlike the elegant

FIGURE 2

THE NEGOTIATION PROCESS


FINISH
TIME
START
COMPONENT ELEMENTS
KEY:
Behaviour
Technique
Topic
System

simplicity of the double helix, however, the model of the negotiation process was pictured as having at least four component elements. These are associated with the user, the search analyst, the topic to be searched, and the system to be used for searching. It is not the representation of these holistic elements that is the concern here but the depiction of the elements that surface as being important during the negotiation process. At a micro level these have been identified as empathy and non-verbal behaviour, structure, and open and closed questions. At a more macro level, the importance of a specific characteristic such as empathy can be broadened to stand for behavioural characteristics in general and the specific method of using open and closed questions for a broader range of techniques used by the search analyst. The notion of structure is incorporated by the sequential progression of the interview in stages through time. In addition, there are at least two other strands that weave through the typical negotiation process, the substantive content of the request and the technicalities pertaining to the choice of descriptors, the formulation of search strategies, and the operation of the system and data base chosen. The first of these is represented by the term "topic," the second by "system."

While the model is meant to be suggestive of general phenomena, it could be adapted to more closely represent specific negotiation interviews. For example, strands may be broadened or narrowed, lengthened or shortened to show when and the extent to which individual elements occur. They may be divided and color-coded to emphasize the prime participant in the process at any given time, whether it is the search analyst or the user. Specific environmental influences may be shown to effect the turns the interview takes. Such detailed mapping, however, must await in-depth analysis derived from a larger sample of negotiation interviews.

Limitations

The conduct of this study was subject to a number of limitations that severely restrict its generalizability. Since data were being drawn from an existing search service, interviews could be taped only of those users who voluntarily submitted requests during a given period. Thus tye type of user was restricted to the kind of clients using EISO. This sample was further reduced by the need to rely on the user to return filled out evaluation questionnaires to complete research files.

In addition, because real users of a specific service were being studied, the nature of the questions being searched could not be subjected to control. In this regard, it may be argued, however, that the type of topic being searched was at least partly controlled by the choice of the academic, non-academic dichotomy. Academic search topics were expected to be broader and more abstract than those for non-academics which were expected to deal more with immediate applications. It will be recalled also that only four cases of new users being interviewed by a single search analyst are examined. It remains for another study to use a larger sample, comparing new and repeat users with multiple search analysts searching a variety of subject areas. Finally, it is hoped that further studies in this area will use videotapes of the negotiation interview since sole reliance on tapes and transcripts do not reflect the extent of use or importance of body language.

Conclusion

It is evident that the warm and friendly personality of the present EISO search analyst is a major influence on users' feelings of high satisfaction with regard to her helpfulness and the interview process. Some other factors, however, do emerge from the preceding brief and exploratory analysis of the four user interviews.

The successful completion of the first stage of the interview process, during which an understanding of the user's problem is obtained seemed to be crucial to the success of the entire interview. The use of the open question, questions pertaining to the organization for which the user works and the reason for the search, all seem to play an important role in providing the search analyst with the information necessary for the success of the crucial first stage of the negotiation process. However, it is even more important that these questions, whether open or closed, be asked in a warm, accepting, and friendly manner, *since the first few minutes of the interview have an important bearing on its progress and eventual outcome.* If we agree with Taylor (1967) who, in his review of studies done on the interview process, found that ease of access to information was more important than the quality of that information, then it is essential that the search analyst display empathy toward the user. Such comments as "Maybe if you described this in a little more detail," "I have the idea now," "Uh-huh," "Hm-mmm," "Okay," all seem to aid in this process.

The development of both a major list and a related list of headings *in the presence of and with the help of the user*; outlining the strategy that will be used to combine these terms in order to retrieve the desired material from the system; developing alternate strategies, and suggesting possible extensions to the topic; all seem to make the user feel more confident, as he understands more and more not only about his topic, but about the process of retrieval from an online computer system which he knew little or nothing about at the start of the interview.

The user is also entitled to a clear statement of realistic expectations. As soon as possible after the interview begins, and certainly before the computer search is executed, he should be apprised of the possible cost of the search, especially if the search analyst believes it will exceed the standard fee. This is even more important when the cost of a search is a flexible matter. He should also be informed how unusual his topic is with regard to the descriptors in the system, and given clear indications of how relevant (or tangential) the material retrieved is likely to be.

Our own experience with users indicates that even though low satisfaction may be expressed regarding the value of the retrieved material, high satisfaction with the helpfulness of the search analyst is almost always shown. In fact, those users who have been disappointed with retrieved items have almost always placed the reason for their disappointment on the fact that the data-base itself did not contain the desired material. And, the majority reported that, in spite of this, not only would they use the service again, but they would recommend its use to colleagues and friends. This seems to point to the inescapable conclusion that, regardless of the structure of the interview, the types of questions asked, or even the final documents retrieved, the ultimate success of an online retrieval service depends to a great extent upon an empathetic analyst. Such a conclusion has obvious implications for the selection, training, and evaluation of search analysts.

CHAPTER 5

SYSTEMS EVALUATION OF USER SATISFACTION WITH EISO

Accompanying the widespread introduction of online bibliographic retrieval services has been a recognition of the need for their careful evaluation. Several approaches have been taken to this problem including price-demand analyses (Cooper and DeWath, 1977), organizational studies (Wax, 1976), data-base evaluations (Lancaster, 1969), and end-users (Brickley and Trohoski, 1974). However, because these studies have taken relatively narrow perspectives, they have failed to assess the inter-relationships of various components of the services in question. In order to facilitate this type of analysis, a comprehensive framework for the evaluation of online bibliographic retrieval services is needed. The purposes of this chapter are to present one such framework, and to provide an example of its use.

A systems approach was used in developing the framework, incorporating the traditional categories of input, process, output, and feedback. In its application, particular emphasis is placed upon assessing the relationships between variables of interest at different stages, such as input and output, while controlling for the effects of intervening variables. It is hoped that in achieving a better understanding of such relationships, those operating search services can make more rational decisions about policies and procedures.

Systems Framework for Evaluation

In the evaluation framework proposed here, a systems approach is used to describe the cycle of activities that occur whenever an online bibliographic retrieval service responds to a user's request. In doing so, four basic questions must be answered. What inputs are required? What processes take place? What outputs are produced? What feedback occurs at each stage? A description of the sequence of events that occur during a search cycle provides answers to these questions.

The search cycle begins with the submission of a request by a user to the search analyst, a specially trained reference librarian. They then "negotiate" the question, until it can be restated in a form that the search analyst can employ to develop a search strategy that can be used to retrieve relevant citations from appropriate data-bases such as the Educational Resources Information Center (ERIC) or the Ontario Educational Research Information System (ONTERIS) files. The analyst then queries the data-base(s) using a retrieval system such as Lockheed Information System (LIS)'s DIALOG, System Development Corporation (SDC)'s ORBIT, or United Nations Educational Scientific and Cultural Organization (UNESCO)'s CDS/ISIS. When combinations of terms are entered, the number of relevant citations and a few sample citations are printed. If the citations are judged to be relevant to the client's question, the complete bibliography is printed offline and mailed to the requestor.

The user, on receipt of the bibliography, reviews its contents and makes a personal assessment of its relevants and thoroughness. As a result, a request for original documents may be made. When these are delivered and read, the search cycle, as we define it, is complete.

Feedback may occur at almost any stage of the search cycle. During question negotiation the search analyst makes inquiries and suggestions about the search topic, and the user responds. During the retrieval of references, a discovery that an excessive number of citations have been located, that citations are not relevant to the topic, or that other terms should be used, may cause negotiations to be reopened and the search strategy altered. Even at the end of the entire cycle, feedback occurs when an informed and satisfied (or uninformed and dissatisfied) user returns an evaluation questionnaire.

This cycle of activities forms the system portrayed in Figure 3. At each stage, three "actors" are involved: the user, the search analyst, and the retrieval system. Each of the three is the referent for a number of variables which describe the characteristics of the search service's inputs, the nature of its processes, and qualities of its outputs.

This sytems framework provides a temporal sequence to events occurring during a search cycle, thereby allowing the evaluator to make reasonable inferences about cause and effect relationships. This is important, since policy makers must have a realistic idea of the ultimate effects of different decisions about inputs and the organization of processing activities. In addition, the framework suggests a categorization scheme for variables according to their roles as measures of inputs, processes, or outputs. However, it does not provide a guidance in the selection of variables to be measured. For this, we turn to the substantive disciplines of sociology, psychology, and economics.

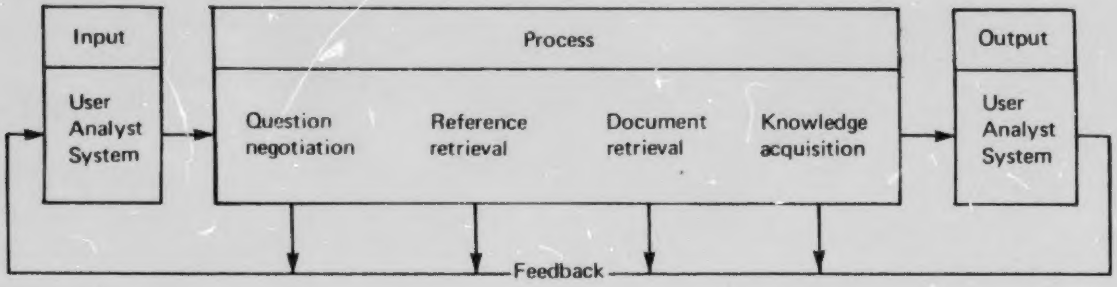
Disciplinary Perspectives

The various academic disciplines offer the evaluator a large number of substantive theories and concepts that might profitably be employed in the selection of variables to be measured and, subsequently, relationships to be analyzed. Those concepts that we felt were of particular value in evaluating a retrieval service were those of role and status from sociology; knowledge and opinion from psychology; and cost, price, and demand from economics. The first two in the list provide direction in collecting data on a service's users; the second two suggest how one might determine the effects of a service on the individual; and the third group identifies factors related to a service's fiscal status. Certainly other concepts could be selected as well, but these seven seemed to be adequate since most of the variables reported in the literature on search service evaluation could be considered as measures of one of these concepts.

The concept of role as it is used in sociology is not unlike the concept of role in drama. The actor, or person,

FIGURE 3

INFORMATION SYSTEM MODEL


Input
User
Analyst
System
Process
Question negotiation
Reference retrieval
Document retrieval
Knowledge acquisition
Output
User
Analyst
System
Feedback

has a part to play and is expected to behave in certain ways, and not others, both by himself and those around him, i.e., his role set. A person can expect to have many different roles at different times, but typically plays only one role at a time (Owens, 1970, pp. 74-77).

By understanding the various roles played by a search service's clients, one can understand and even predict user behaviour and reactions. Since requesting a literature search is an act primarily associated with institutional as opposed to private life, it is apparent that the individual's professional roles are of primary interest.

Social status, the second sociological concept used to guide the selection of variables, refers to a person's standing in the community and the deference the person can expect. It has been identified as an important variable in the literature on the work of reference librarians since the reference interview often reverses status positions. In a particular instance, a user who holds a position of high status may be forced to admit to being ignorant, thereby accepting a temporary status inferior to that of the reference librarian. Such a humbling experience may not be easily accepted by senior professors or administrators and their personal reactions might create a barrier to the open communication of their information (Shosid, 1974). Ultimately, this could affect their level of satisfaction with the service. For this reason, knowledge of the social status of a service's users is of value.

The nature of knowledge and the process of learning provide the subject matter for learning psychologists who have developed a number of theories that might be useful in explaining why an individual requests information and how he or she learns from it. These theories tend to agree on three basic precepts. First, a learner must be motivated to learn. This motivation may be based in the individual's personality (which opens up another realm of psychology) or it may be present in the individual's environment, such as the role the person plays.

Second, a learner must possess some prior knowledge in order to learn a new concept or develop a new understanding. A person almost totally lacking in knowledge about a topic would probably submit an inadequate search request, question negotiation might prove arduous, and the end results might prove less than satisfactory.

Finally, regardless of whether a simple fact or a complex concept involving generalizations and inductive leaps is learned, the learner is changed in the process.

These three generalizations about the learning process emphasize the importance of knowing the extent of a user's motivation, prior knowledge, and new knowledge gained as a result of a given search.

As a search is conducted and the user reviews the results, another psychological process comes into play: the development of opinions. Opinions, which reveal a predisposition to act in a specific way toward some object (the so-called "attitude object"), constitute a major set of output variables. Presumably, opinions about the quality of a search service and its products determine the likelihood of a user's returning to submit additional search requests. Indeed, the recommendation that user satisfaction be assessed on a regular basis is perhaps the most common recommendation in the literature on search-service evaluation.

The concepts of cost, price, and demand, drawn from the field of economics, also guide the selection of specific variables. Costs are typically broken down into fixed costs (or overhead) which represent the dollar expense that continues even when nothing is produced, and variable costs, that are incurred when production is raised to a given level. For a search service, fixed costs include salaries, equipment leases, etc., while variable costs are primarily associated with the charges made by companies providing the retrieval service for connect-time, citations printed, and communications. Costs may be presented as total (aggregate) costs, or in terms of unit costs.

Setting prices has been a controversial and difficult matter for search services, first because library services traditionally have been provided without charge and second because of poor data on total costs. A related concern is the relationship between price and demand. Without knowledge of the elasticity of demand (i.e., the relative change in demand that occurs in response to a change in price) for searches, it is difficult to tell what, if any, effect different pricing policies may have. Hence, measurement of price and demand are of critical importance in the evaluation of search services.

A wide array of variables must be measured to provide data necessary for various types of economic analyses. Some, such as staff salaries, are input variables which would be used to determine fixed costs. Others, such as the computer connect-time for a given search, are process variables which would be used to compute variable costs and, perhaps, customer prices. These data may be used in their raw form for some analyses or aggregated into totals for others.

In the preceeding description about the way in which concepts drawn from the disciplines of sociology, psychology, and economics can be used to guide the selection of variables to be measured in evaluating a search service, little was said concerning the level or type of analyses that could be conducted. This ommission was purposeful, since it is anticipated that the framework can be applied at different levels and to explore different relationships. In the application that follows, data are treated in disaggregate form; in contrast, an analysis of price-demand would require aggregate data. Also, the application is "inter-disciplinary" in that relationships between several sociological, psychological, and economic variables are investigated, though a discipline-based theory could just have easily been tested. In short, the level at which the framework is applied and the particular analyses carried out depend upon the specific questions the evaluator or researcher is trying to answer.

Application of Model

The remainder of this chapter describes the evaluation of two aspects of the Educational Information System for Ontario using the systems framework portrayed in Figure 3. The purpose of the first application is to determine to what extent the client's personal and professional background is related to his or her satisfaction with EISO. The purpose of the second is to determine the relationship among the procedures followed in processing a search request and the user's gain in knowledge and degree of satisfaction. Together, these assessments should provide a good understanding of the factors affecting user satisfaction with the service, and thereby suggest methods of maintaining and increasing it.

Sample

The population for this study is the universe of all 371 searches requested from EISO between May 1, 1976 and April 30, 1977. Though some data were available on all searches, the present analysis was restricted to those which had been run on ERIC and for which the requestor had returned an evaluation questionnaire. The total number was 148 (40% of all searches), but missing responses on some variables resulted in a smaller number being used for some analyses.

Virtually all searches were placed by users from the professional education community in Ontario, which EISO was designed to serve. In general, 40% of EISO's users were from school boards, 40% were from OISE, 10% from other universities and faculties of education, and 10% miscellaneous. Approximately 30% of the users reported that they were engaged in administration, 17% in teaching, 12% in research, 18% in graduate study, 7% in librarianship, and 14% other.

Methodology

Path analysis was selected to analyze the relationships among input, process, and output variables because it provides a method of testing the validity of causal inferences for pairs of variables while controlling for the effects of other variables (Nie, 1975, pp. 383-397). In addition, path diagrams provide heuristic portrayals of systems relationships which are well suited to the systems framework used to organize the variables in this study.

The analytic technique used in this investigation follows the practices advocated by Goldberger (1970). In particular, the path coefficients presented here are the standardized regression coefficients resulting from regression of the dependent variable in question on those variables directly affecting it, and those alone. In cases where there is but one predecessor variable, the path coefficient is identical to the zero-order correlation coefficient; in other cases it is equivalent to the partial correlation coefficient of the dependent variable on the standardized predecessor variable controlling for other variables directly affecting the dependent variable.

The amount of unexplained variance in any dependent variable X_i is assumed to be accounted for by hypothetical "error" variables denoted by e_i. The correlation between e_i and X_i is equal to $\sqrt{1 - R^2}$ where R^2 is the multiple correlation between X_i and all predecessor variables directly affecting it.

Not all relationships for which no causal inferences are plausible may be omitted. Second, relationships between exogenous variables (portrayed at the left of the path diagram) are typically unanalyzed, though they are sometimes controlled for if they are considered to interact with one another. Finally, correlations among the e_i are assumed to be zero and remain unanalyzed.

Path analysis requires three principal assumptions which may or may not be valid. First, all relationships are assumed to be linear; second, relationships are assumed to be additive; and third, it is assumed no interaction (i.e., multiplicative effects) exists among variables. As well, some authors would hold that the variables are assumed to be measured on a ratio scale with some fixed unit of measure.

For the dichotomous variables, such as sex, and those measured in standard units of measure, such as the turn-around time, none of the assumptions would be violated: Those measured on Likert scales, such as satisfaction, may violate assumptions as to linearity and unitary measurement. However, because monotonic, if not linear, relations are expected for all relationships involving these variables, violation of the first assumption would, at worst, cause the relationships to be underestimated.

Collection of Data

The major sources of data used in these evaluations were a User Evaluation Questionnaire (Appendix A) and a Data Sheet completed by the search analyst (Appendix C). In all, 131 different variables were regularly collected for each search that was completed. Selection of these items was guided by the discipline-based concepts noted earlier. Most were drawn from the literature of previous evaluation studies but only those that were defensible measures of roles, status, knowledge, opinion, cost, price, or demand were included. Where gaps appeared, additional items were developed.

Measurement of Variables

Descriptions of the items used to measure the variables included in the first analysis which focuses on the influence of the sociological background of clients on their level of satisfaction are listed in Table 25; those for the second analysis which focuses on the influence of process variables on client satisfaction appear in Table 26.

The first five variables in Table 25 are input variables related to the backgrounds of clients. All are dichotomies coded 1 or 0. LOCATION refers to the location of the organization in which the user was employed or enrolled as a student. SEX needs no explanation. ORGANIZN is the organization in which the user was employed or enrolled as a student. The PURPOSE of the search refers to the use made of the search, whether it was for professional or academic purposes. PROFROLE indicates whether the user was in an administrative or non-administrative professional position.

TABLE 25

VARIABLES USED IN EVALUATION OF USER'S BACKGROUND AND LEVEL OF SATISFACTION

Variable[†]		Item Description and Coding	
Number	Name	Description	Coding
1	LOCATION	Metropolitan Toronto	1
		Outside Metro Toronto	0
2	SEX	Female	1
		Male	0
3	ORGANIZN	Student or staff of OISE	1
		Non-OISE	0
4	PURPOSE	Purpose of search:	
		Non-academic	1
		Academic	0
5	PROFROLE	Professional role:	
		Administrative	1
		Non-administrative	0
6	SYSTEM	Search system used:	
		SDC ORBIT	1
		LIS DIALOG	0
7	SATIS6[§]	Overall satisfaction	
8	SATIS1	Satisfaction with publicity materials and directions	
9	SATIS2	Satisfaction with convenience and helpfulness	
10	SATIS3	Satisfaction with timeliness of service	
11	SATIS4	Satisfaction with quality of technology	
12	SATIS5	Satisfaction with value of bibliography	

[†] Variables 1 through 4 and 6 are recorded by search analyst on data sheets. Variables 5 and 7 through 12 indicated by client on User Evaluation Questionnaire.

[§] See Table 27 for complete list of satisfaction items and construction of subscales.

TABLE 26

PROCESS AND OUTPUT VARIABLES USED IN SEARCH SERVICE EVALUATION

Variable[†]		Item Description and Coding	
Number	Name	Description	Coding
1	CONTACT	In person	1
		Other	0
2	SYSTEM	SDC ORBIT	1
		LIS DIALOG	0
3	TURNARND	Turnaround time in days between receipt of request and online searching	
4	CNCTIME	Connect-time in minutes	
5	STRATIME	Interview and strategy time in minutes	
6	CITPRINT	Number of citations printed	
7	PRICE	Price charged in dollars	
8	AMTLRDTC	How much did you learn about your topic as a result of the search? (1) __ Nothing or very little (2) __ Some (3) __ A great deal	
9	SATIS6[§]	Overall satisfaction	
10	SATIS1	Satisfaction with publicity materials and directions	
11	SATIS2	Satisfaction with convenience and helpfulness	
12	SATIS3	Satisfaction with timeliness of service	
13	SATIS4	Satisfaction with quality of technology	
14	SATIS5	Satisfaction with value of bibliography	

[†] Variables 1 through 7 recorded by search analyst on data sheets. Variables 8 through 14 indicated by client on User Evaluation Questionnaire.

[§] See Table 27 for complete list of satisfaction items and construction of subscales.

TABLE 27

ITEMS USED IN SIX SATISFACTION SUBSCALES

Question: Please indicate your satisfaction with the following elements of your EISO search.

SATIS1 - Publicity Material and Directions

- a. Convenience of arrangements and adequacy of directions
- b. Accuracy and comprehensiveness of publicity materials
- c. Adequacy of directions for ordering materials

SATIS2 - Convenience and Helpfulness

- a. Convenience of arrangements and adequacy of direction
- b. Helpfulness of search analyst

SATIS3 - Timeliness of Service

- a. Time taken to deliver bibliography
- b. Time taken to deliver materials from EDRS
- c. Time taken to deliver materials from EISO

SATIS4 - Quality of Technology

- a. Length of bibliography
- b. Readability of microfiche copies
- c. Availability of microfiche readers

SATIS5 - Value of Bibliography and Materials

- a. Bibliography itself
- b. Materials located via bibliography

SATIS6 - Overall Satisfaction

1a, 2b, 3a, 4a, 5a

Note: Scale scores were adjusted for the number of items by dividing total scale scores by the number of items. Scale: Low = 1; medium = 2; high = 3; NA = 4.

The final input variable, SYSTEM, refers to the computer search service that was used in executing the search: SDC ORBIT or LIS DIALOG. Although this variable is a system rather than user input, it was included in the analysis because differences between the two influenced the selection of the system used in conducting searches. In particular, the direct mail service provided by SDC, which allows the computer-produced bibliography to be sent directly to the client from SDC, meant that this service was often preferred for users located some distance from Toronto.

User satisfaction with various aspects of the search service were measured by five subscales (SATIS1 to SATIS5) consisting of scales that included satisfaction with publicity materials and directions (SATIS1), with convenience and helpfulness (SATIS2), with timeliness of service (SATIS3), with the quality of technology (SATIS4), and with the value of the bibliography (SATIS5).

Individual items used in constructing subscales are reported in Table 27 and include those used in the scale used to measure overall satisfaction (SATIS6). The latter scale used five items selected from the subscales; not all items were included because many clients had not been exposed to all aspects of the service and therefore had failed to respond to some items. Instead, only those items referring to matters to which all clients had been exposed were included in the scale.

Reliability coefficients for the six scales were .80, .62, .78, .27, .79, and .80 respectively. Overall, these coefficients are sufficiently high for the scales to be used in assessing the satisfaction of EISO's users with the service.

The fact that all input variables are dichotomies calls for special care in interpreting correlation or path coefficients between these and other variables. For example, a positive correlation between location and organization would imply that users from Metro Toronto (coded 1) tend to be associated with OISE (also coded 1), whereas those from outside Toronto (coded 0) tend to be associated with other institutions (also coded 0). Where the second variable is continuous, as in the case of satisfaction, a positive correlation implies high satisfaction is associated with the trait coded 1 and low satisfaction with the trait coded 0. In the case of the relationship between, say, location and satisfaction, a positive correlation would imply that users from Metro Toronto (coded 1) were more satisfied than those from outside Toronto (coded 0).

A total of 14 variables are used in the second analysis which is devoted to the study of the effect of the search process on user satisfaction (Table 26). Seven are process variables, one is an intervening variable, and the remainder are the satisfaction variables that have been previously described.

The first two variables in the second analysis, method of contact (CONTACT) and system used (SYSTEM), are dichotomies and coded as 1 and 0. As noted earlier, care must be taken in interpreting correlation and path coefficients computed between these and other variables.

Turnaround time (TURNARND) is simply the number of days that elapse between receipt of a search request and execution of the search. In practice, the date of each transaction is recorded, and the difference between the two is calculated at the time data are analyzed.

Connect-time in minutes (CNCTIME) and the number of citations printed (CITPRINT), data listed automatically at the end of each search, are transcribed to the data-sheet used for EISO's records by the search analyst. The analyst is also responsible for recording the estimated amount of time spent in question negotiation and planning the search strategy (STRATIME). Because of the complex and iterative nature of these tasks, the figures recorded for STRATIME are probably accurate only within ±15 minutes.

The price (PRICE) charged for each search is recorded in Canadian dollars. While this is straightforward, the pricing policies in effect during the period data were collected were not. Four different modes of charging were used:

1. free searches allocated to target groups to encourage trial use of the service,

2. $20 flat rate for clients from a target area located in Northern Ontario,
3. $30 flat rate for searches without an excessive number of citations,
4. $30 plus a surcharge of $.10 per citation for searches with an excessive number of citations.

The policy on charging for an excessive number of citations was applied in a flexible manner by the search analyst. Typically, it was applied whenever the combination of connect-time, communication, and print costs exceeded $45.00. It must be emphasized that pricing policy has a direct effect on the types of relationships one can expect to find. Because most EISO clients received searches for either $30.00 or nothing during the period under consideration, any effect of PRICE on other variables will be interpretable as the effect of charging $30.00 as opposed to providing free service.

The amount a client learned about his or her topic (AMLTRDTC) as a result of undertaking a search was tapped by the straightforward question listed as variable 8 in Table 26. As with other one-item variables, it is not possible to compute a reliability coefficient for this measure. However, its validity was confirmed by correlating responses on it with questions about the number of original documents read, and the percentage of information that was new to the client. Correlations coefficients were .36 and .40 respectively, both significant at the .05 level.

Sociological Input Model

Who are EISO's users and how does their identity affect their levels of satisfaction with the service? As suggested above, these are important questions which reflect the success of the service in achieving its goals. By implication, if one kind of client is less satisfied than another, changes in the service might be necessary in order to raise their level of satisfaction.

The question as to the users' identities is answered here in terms of the two sociological concepts noted earlier, role and status. We view these as characteristics that clients bring with them to their encounter with the search service, and as such represent inputs to the system. Since status is itself in large part an attribute associated with a given role, it is difficult to measure these two aspects separately. Most of the variables we have selected reflect, to one degree or another, both the role and status of the individual client.

Description of Model

The image guiding the selection of sociological variables to characterize EISO's users was that of a professional educator working or studying at some location in Ontario. The user's geographic location (LOCATION) and sex (SEX) were viewed as two background variables of possible importance. Location is a factor of considerable policy importance since one of EISO's major purposes is to make the resources of a major research library available to educators throughout the province. To be sure, current limitations of automated retrieval systems make this a distant goal, yet the quick retrieval of both references and original documents in RIE, CIJE, and ONTERIS does provide access to a large and important body of knowledge. While the sex of a client is not, in and of itself, of primary importance, it is a factor known to be related to the role of professional educators; in particular, relatively few women currently hold administrative positions within Ontario's educational system. Thus, sex was viewed as a background variable that should be controlled.

A client's organization (ORGANIZN), professional role (PROFROLE) and purpose in conducting the search (PURPOSE) were viewed as the major characteristics defining his or her role. Though the coding scheme used in this analysis greatly simplifies the original categorization scheme, we originally determined whether or not a user was in any one of 29 different types of organizations or units; e.g., preshcool, public school board, separate school board, private school, College of Applied Arts and Technology, faculty of education, etc. Professional roles were classified into 14 categories; e.g., administration or supervision, teaching, pupil personnel services, research, etc. Finally, the purpose of the search, which we saw as an objective in large part determined by the individual's organization and role, was initially placed in one of eleven categories; e.g., keeping abreast of the field, class assignment, preparation of a bibliography, curriculum development, etc.

To illustrate the connection among PROFROLE, ORGANIZN, and PURPOSE, consider two typical users. One might be a full-time graduate student at a faculty of education conducting a literature search for a class assignment; the other might be a senior administrator in a public school board seeking information about curriculum guidelines.

Another input variable related to the service's activities is the particular search system used (SDC's or LIS's). While not a sociological variable, this characteristic (SYSTEM) is included as a factor of possible importance because one of the systems SDC, offers the capability of mailing bibliographic output directly to the client. For those clients in remote locations, therefore, SDC may be a preferred service in terms of their satisfaction with the service's turnaround time.

Finally, the output variable of interest is satisfaction, which was measured by 12 items relative to 5 distinct aspects of the service: publicity materials and directions (SATIS1), convenience and helpfulness (SATIS2), timeliness of service (SATIS3), quality of technology (SATIS4), and value of the bibliography (SATIS5). A subscale of 6 items was also derived to measure overall satisfaction (SATIS6).

Organizing the variables described above into a formal path model results in the diagram pictured in Figure 4. LOCATION and SEX are background variables whose relationship to one another remains unanalyzed, but whose effects on other variables are considered. Location may affect satisfaction both directly and indirectly. One indirect path is through its influence on the system used. The second effect is via its influence on the type of organization from which the client comes. Sex, too, may affect satisfaction both directly and indirectly. The indirect effects may be through the type of organization or the individual's professional role.

Organization stands as a key intervening variable between the background variables and satisfaction, on which it may have a direct effect. However, it may also have indirect effects via the individual's professional role and the purpose of the search. Similarly, professional role may affect satisfaction directly or through the purpose of the search, while the latter variable is postulated to have only direct effects.

It may be noted that other paths than those noted are possible; however, we are including only those which seem logical given known relationships and the meaning of the variables. Thus, for example, we have omitted paths connecting, say, SEX and SYSTEM. It should also be noted that where direct effects are suggested, these effects are residual to the effects through other variables. Thus, the path connecting organization and satisfaction represents the effect on satisfaction of the individual's organizational status after the effects of the person's professional role and purpose in conducting the search have been removed. All residual variation which is not accounted for by any of the variables in the model is assumed to be caused by external variables, represented by the e_i's.

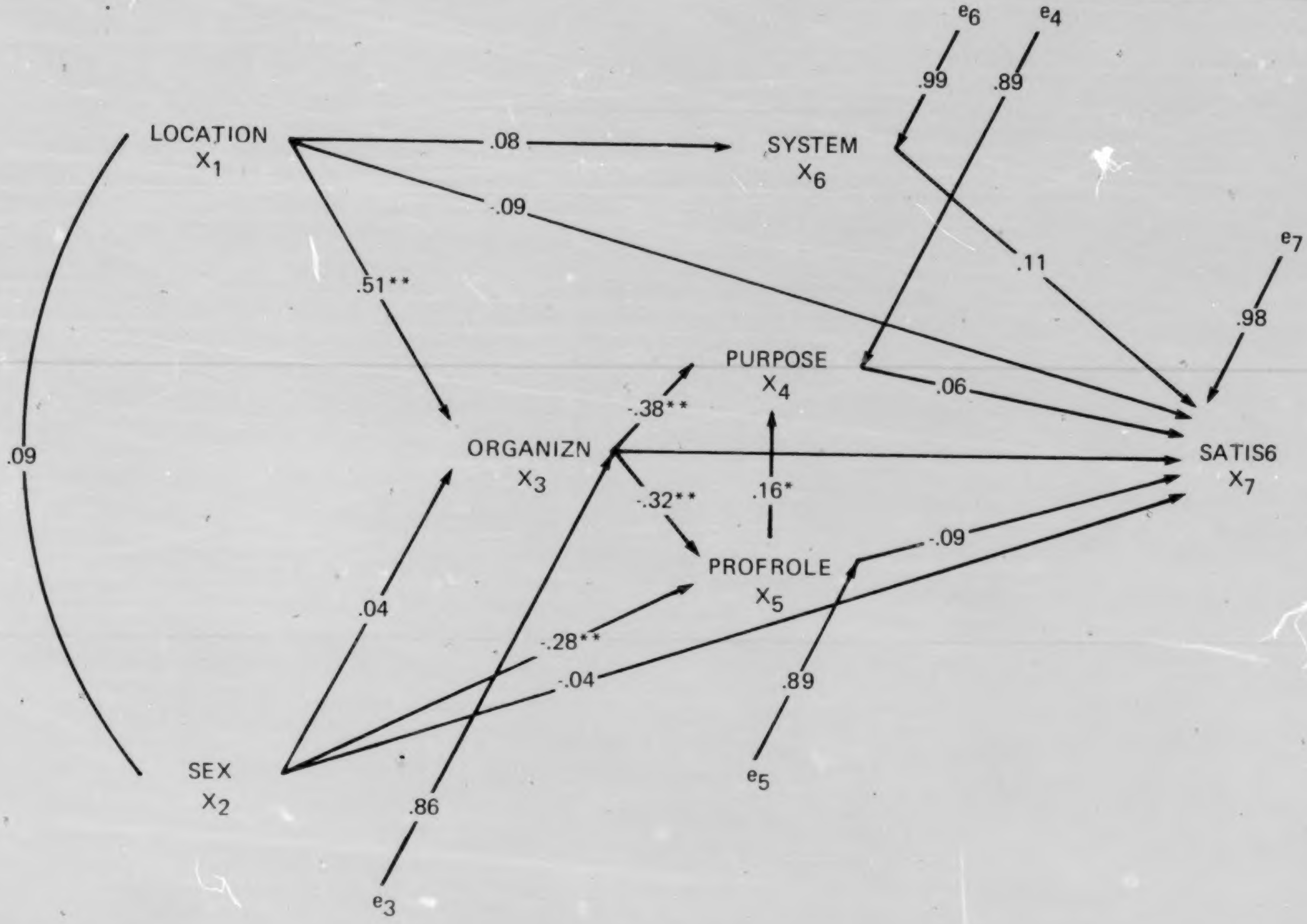
The problem for this particular analysis, then, is to test the validity of the inferences about cause and effect relationships suggested by the path analysis model depicted in Figure 4. While confirmation of the relationships described by the model does not prove the existence of the implied causal relationships, it would provide evidence supporting their plausibility.

Findings

In this section, we shall proceed from the general to the specific, presenting first the findings for the path analysis in which overall satisfaction (SATIS6) is the dependent or output variable, and then the results for the five satisfaction subscales. Table 28 lists the correlation coefficients, means, and standard deviations for the seven variables that appear in the path diagram in Figure 4. The means

FIGURE 4

PATH DIAGRAM FOR SOCIOLOGICAL INPUT MODEL



e_6
e_4
.99
.89
LOCATION X_1
.08
SYSTEM X_6
-.09
e_7
.11
.51**
.98
PURPOSE X_4
.06
-.38**
.09
ORGANIZN X_3
SATIS6 X_7
.16*
-.32**
-.09
PROFROLE X_5
.04
-.28**
-.04
.89
SEX X_2
e_5
.86
e_3

TABLE 28

CORRELATION MATRIX, MEANS, AND STANDARD DEVIATIONS FOR VARIABLES IN SOCIOLOGICAL INPUT MODEL EXPLAINING OVERALL SATISFACTION WITH SERVICE

	X_1	X_2	X_3	X_4	X_5	X_6	X_7
X_1 LOCATION							
X_2 SEX	.095						
X_3 ORGANIZN	.511[†]	.087					
X_4 PURPOSE	-.430[†]	-.197[†]	-.434[†]				
X_5 PROFROLE	-.135[§]	-.309[†]	-.348[†]	.294[†]			
X_6 SYSTEM	.093	.004	.007	-.059	.030		
X_7 SATIS6	-.050	-.024	.053	.035	-.081	.094	
Mean	.531	.364	.352	.469	.327	.154	2.59
Standard Deviation	.501	.483	.479	.501	.471	.362	0.37

N = 162

[†] $p < .01$

[§] $p < .05$

for the sociological background variables need some interpretation since the variables themselves are dichotomies.

The mean of .53 for LOCATION indicates that 53% of the users in the sample were from Metro Toronto and, conversely, that 47% were from outside Toronto, Similarly, the means for SEX, ORGANIZN, PURPOSE, PROFROLE, and SYSTEM can be interpreted in terms of percentages: 36% were students or staff at OISE; 47% of all searches were for professional as opposed to academic purposes; 33% of the clients held administrative positions; and 15% of all searches were conducted using SDC. The mean of 2.59 (on a scale from 1 to 3) for overall satisfaction indicates the average user was highly satisfied.

The zero-order correlations among the five sociological background variables are seen, for the most part, to be statistically significant. In contrast, neither SYSTEM nor SATIS6, overall satisfaction, have and statistically significant relationships with the other variables included in the analysis.

The path analysis in Figure 4 shows that the pattern of correlations exhibited in the correlation matrix are present even when all of the background variables are entered. Tracing the various paths, we see the following relationships.

LOCATION has a very weak, non-significant positive correlation with SYSTEM, indicating that SDC was not used more often for clients distant from Toronto. Given the coding system, a negative relationship would have been indicated. Location has a non-significant negative correlation with satisfaction. What slight relationship there is would suggest greater satisfaction among those users outside the immediate metropolitan area where EISO is located. Finally, location does have a strong positive correlation with organization, confirming that most of OISE's staff and students who use the system are associated with the main campus in Toronto rather than one of its nine field centres.

SEX, the other prior variable contained in the path model in Figure 4 exhibits only one significant relationship, that with PROFROLE. This relationship implies that EISO's women clients tend to hold non-administrative positions, and that its male clients tend to hold administrative positions.

At the next stage of analysis, ORGANIZN is seen to have significant relationships with both the purpose of the search (the negative path coefficient implies those outside OISE are more likely to request searches for professional rather than academic purposes) and the professional role of the individual (the negative relationship implies that OISE users tend not to be administrators, while professional clients tend to hold administrative positions). Finally, ORGANIZN has a residual positive effect on satisfaction, after the removal of effects due to SEX, LOCATION, PURPOSE, and PROFROLE.

The last stage of the path diagram involves SYSTEM, PURPOSE, and PROFROLE. SYSTEM is seen to have no statistically significant effect on satisfaction. Similar conclusions hold for PURPOSE -- academic and non-academic users are equally satisfied -- and PROFROLE -- administrators and non-administrators are equally satisfied.

Turning now to the path analyses for the satisfaction subscales reported in Table 29, we note that that pattern of path coefficients is very similar to that observed for overall satisfaction. In fact, all coefficients not involving a satisfaction subscale are in fact estimates of the same coefficients reported under the preceding analysis. They differ only because of the different sizes of the subsamples for which complete data were available.

Concentrating on the satisfaction subscales, we note two significant correlations. Since, among the 36 path coefficients, we would expect about this number to statistically significant at the .05 level by chance alone even when there were no real relationships, we should not place much weight upon them. The two paths we refer to are between PURPOSE and SATIS1, satisfaction with publicity materials and directions. This relationship would imply slightly greater satisfaction with these among users requesting searches for non-academic purposes. The second significant relationship between LOCATION and SATIS5, satisfaction with the value of the bibliography and materials, is negative. This would imply that users from outside are more satisfied with the end result of searches than are those from inside Toronto.

TABLE 29

PATH COEFFICIENTS FOR SOCIOLOGICAL INPUT MODEL EXPLAINING SUBSCALE SCORES FOR SATISFACTION WITH SERVICE

Path	Statistic	Variable					
		SATIS1	SATIS2	SATIS3	SATIS4	SATIS5	SATIS6
1. LOCATION-SEX	r_{12}	.11	$.16^{\S}$	-.06	.11	.08	.09
2. ORGANIZN-LOCATION	p_{31}	$.52^{\dagger}$	$.55^{\dagger}$	.25	$.70^{\dagger}$	$.48^{\dagger}$	$.51^{\dagger}$
3. ORGANIZN-SEX	p_{32}	.05	.06	-.01	-.04	.04	.04
4. PURPOSE-ORGANIZN	p_{43}	$-.36^{\dagger}$	$-.39^{\dagger}$	-.36	$-.33^{\dagger}$	$-.34^{\dagger}$	$-.38^{\dagger}$
5. PURPOSE-PROFROLE	p_{45}	.11	$.15^{\S}$	-.07	$.27^{\S}$	.15	.16
6. PROFROLE-SEX	p_{52}	$-.32^{\dagger}$	$-.28^{\dagger}$	$-.42^{\S}$	$-.35^{\dagger}$	$-.31^{\dagger}$	$-.28^{\dagger}$
7. PROFROLE-ORGANIZN	p_{53}	$-.31^{\dagger}$	$-.34^{\dagger}$	$-.39^{\dagger}$	$-.33^{\dagger}$	$-.30^{\dagger}$	$-.32^{\dagger}$
8. SYSTEM-LOCATION	p_{61}	.06	.04	.18	.02	.07	.08
9. SATIS-LOCATION	p_{71}	.11	.11	.37	-.11	$-.23^{\S}$	-.09
10. SATIS-SEX	p_{72}	.08	-.05	-.21	.11	.02	-.04
11. SATIS-ORGANIZN	p_{73}	.03	.11	.06	.07	.04	.10
12. SATIS-PURPOSE	p_{74}	$.18^{\S}$	.13	.19	.02	-.08	.06
13. SATIS-PROFROLE	p_{75}	-.08	-.06	-.31	-.07	.03	-.09
14. SATIS-SYSTEM	p_{76}	.01	.11	.07	.12	-.09	.11
n		171	182	32	75	148	162
$\overline{X}$		2.57	2.77	2.41	2.51	2.32	2.59
s		.46	.37	.43	.38	.66	.34

$^{\dagger}p < .01$

$^{\S}p < .05$

Discussion

This path analysis shows that EISO has satisfied both of its major markets with equal effectiveness. One of these markets, the professional market, is composed especially of male administrators located throughout Ontario. The other, academic market, is composed of students and academicians. This group has a higher percentage of women than the other, and is concentrated in Toronto, especially at OISE.

The fact that the sociological input model fails to explain different levels of client satisfaction can be taken as a mark of EISO's success. Housed as it is in an academic library at OISE in Toronto, one would expect a tendency for it to serve its immediate constituency best. The very lack of such a relationship indicates it has been successful in satisfying the needs of professional educators with equal effectiveness.

It should be emphasized that EISO is effective. The mean score for the clients overall satisfaction was 2.6 on a three-point scale. The subscale means in Table 29 show that users are also highly satisfied with EISO's publicity materials and directions (SATIS1) its convenience and helpfulness (SATIS2), and the quality of its technology (SATIS4). The users reported a moderately high level of satisfaction on the remaining two subscales, timeliness of service (SATIS3) and the value of the bibliography and materials (SATIS5). Given that the timeliness of service was in part dependent on delivery of materials from EDRS in the U.S., we can even discount, to some extent, one of these two.

The fact that the sociological input model has failed to explain different levels of satisfaction does not mean the small variation observed in these variables cannot be explained; there may be other models that are more effective at this task. With this in mind, we now describe the second model, which considers process variables which are more directly under the control of the EISO search service.

Process Model

As with the sociological input model, the process model for explaining levels of user satisfaction represents a subsystem within the larger evaluation framework, and involves only a fraction of the data collected. Key process variables are the method of contact (CONTACT), the system used to search the data base (SYSTEM), the length of time required for the search interview and to plan the search strategy (STRATIME), the connect-time (CNCTIME), the number of citations printed (CITPRINT), and price (PRICE). All of these variables except the method of contact relate directly to the cost of operating the service or the price charged. The method of initial contact describes the actions of the client in playing the role of requestor. Two important variables, the data base being searched and the identity of the search analyst, have been eliminated in this list of process variables since they are being held constant by limiting the analysis to searches of the ERIC data-base conducted by one search analyst.

The output or dependent variables at issue are the amount learned by the client about the topic searched (AMTLRDTC) and his or her satisfaction (SATIS). In fact, satisfaction was measured with 12 items which were grouped to form five subscales (SATIS1 to SATIS5) measuring client satisfaction with different aspects of the service; a subset of five of these items were added to give an indication of overall satisfaction (SATIS6).

Description of Model

Using the temporal sequence of events provided by the systems framework, we can order the process and output variables and thereby refine the statement of the problem into a series of questions about pair-wise relationships. Method of contact should clearly be the first variable, followed sequentially by strategy time, turnaround time, selection of a system, connect-time, citations printed, price, amount learned, and finally satisfaction. This sequence does not imply that each variable causes the one that follows; however, within the sequence, there are a number of plausible cause-effect pairings.

Method of contact may have a direct effect on both connect-time and strategy-time since if a person is present in person far more discussion and searching is likely to occur than if contact is by telephone or letter. Connect-time and strategy-time, in turn, could effect the number of citations printed since more time spent on these probably results in a longer bibliography. The number of citations printed might affect both price, if a variable pricing policy is used, and the amount learned by the client, since a longer bibliography may contain more information. And, both price and amount learned might affect satisfaction.

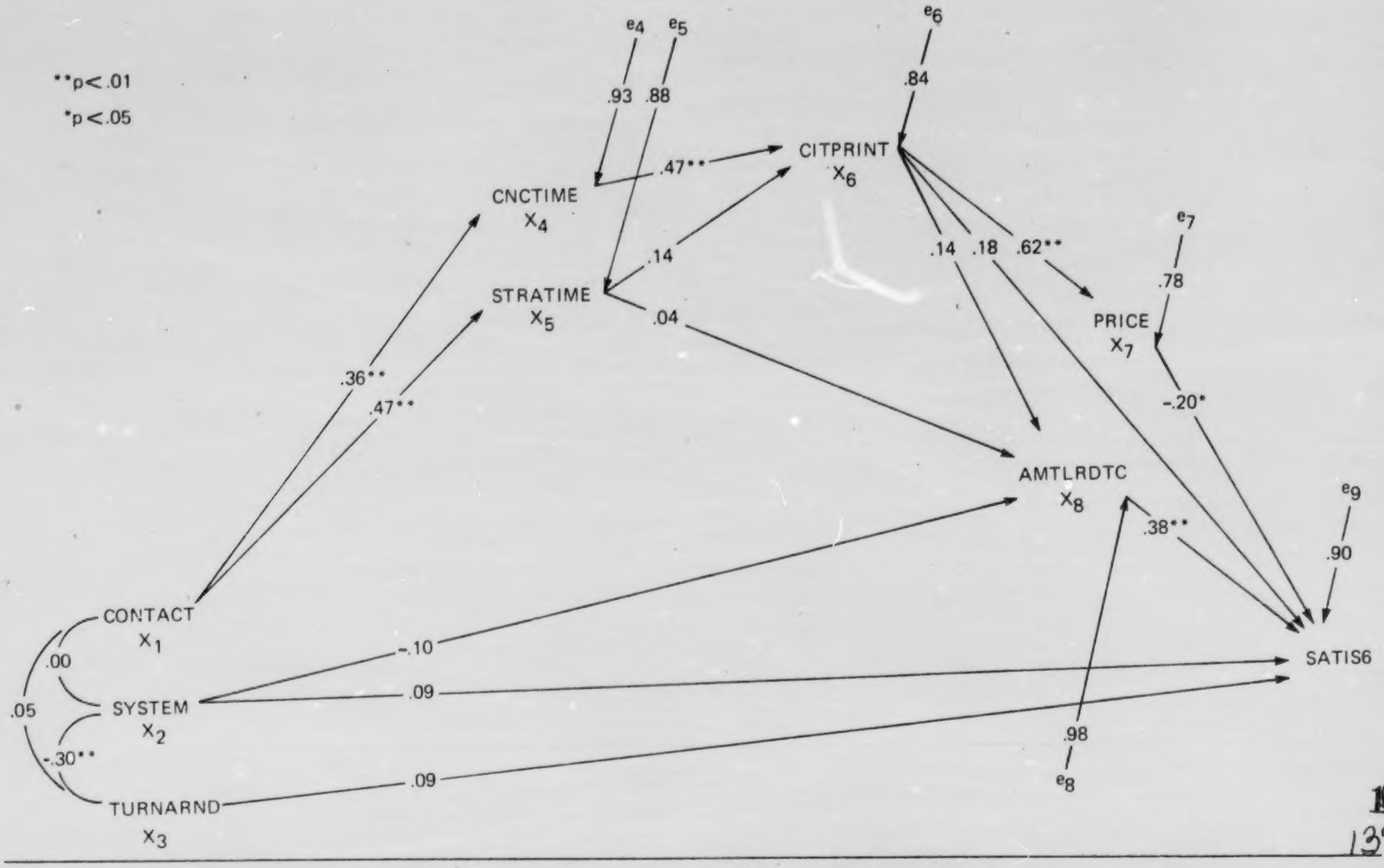
It is unlikely, in contrast, that the system used or turnaround time will affect any of the process variables, though both might well affect satisfaction: turnaround time because long delays might reduce satisfaction, and system used because one might be more effective than the other at retrieving relevant references. If the latter is the case, then the system used may also affect the amount learned by the client. Finally, the amount a client learned might also be positively influenced by the time spent in negotiating and planning the search strategy, independent of the bibliography.

The problem for investigation thus becomes testing the validity of the preceding inferences about cause and effect relationships between different pairs of variables. The particular method selected for this purpose is path analysis.

The path diagram for the relationships described above is displayed in Figure 5. Both temporal sequence and cause-effect relationships are indicated by the flow of the diagram from left to right. Following the conventions of path diagrams, those variables with no predecessors are aligned to the left. The diagram is helpful in showing the flow of action as a search is executed, and in identifying the relationships being investigated. The path coefficients noted on the diagram are discussed later, but it is worthwhile noting the introduction of hypothetical variables (the e's) which represent external variables whose effects are not explained by variables in the model.

FIGURE 5

PATH ANALYSIS FOR PROCESS MODEL


**p<.01
*p<.05
e4
e5
.93
.88
e6
.84
CITPRINT
X6
.47**
CNCTIME
X4
.14
STRATIME
X5
.04
.14
.18
.62**
e7
.78
PRICE
X7
-.20*
.36**
.47**
AMTLRDTC
X8
.38**
e9
.90
CONTACT
X1
.00
-.10
SYSTEM
X2
.09
SATIS6
.05
-.30**
.98
e8
.09
TURNARND
X3

Findings

In this section we shall proceed from the general to the specific, presenting first the findings for the path analysis in which overall satisfaction (SATIS6) is the dependent or output variable, and then the results for the five satisfaction subscales.

Table 30 lists the correlation coefficients, means, and standard deviations for the nine variables that appear in the path diagram in Figure 5. Several of the means need interpretation to be understood. For CONTACT, $\overline{X} = .53$ implies that 53% of all clients contacted the search analyst in person; similarly, the mean of .19 for SYSTEM implies that only 19% of all searches were done using SDC's ORBIT while the remaining 81% were carried out using LIS's DIALOG.

The average delay in running a search was 4.3 days, but the actual search process took about 70 minutes, including 46 minutes for interviewing and planning the strategy, and 24 minutes for running the search. The average bibliography included 104 items, and cost the client $28, though this average is of questionable use since most clients either received the search free (9%) or paid $30 (82%). The average client learned "something" about the topic searched (since at 2.2 the mean for AMTLRDTC is near the middle of the three-point scale) and expressed high overall satisfaction (2.6 on a scale of 3).

We will not analyze the correlations in detail since that is the purpose of the path analysis. However, we would note that initially, only the amount learned about the topic has a significant zero-order correlation with overall satisfaction.

Path coefficients for analyzing the causal effect of the seven process variables on the two output variables, AMTLRDTC and SATIS6, are included in Figure 5, where each causal path is indicated by an arrow. The most informative paths are those that can be traced from CONTACT through CNCTIME and STRATIME to CITPRINT, AMTLRDTC, and PRICE, and finally to SATIS6.

TABLE 30

CORRELATION MATRIX, MEANS, AND STANDARD DEVIATIONS FOR VARIABLES IN PROCESS MODEL EXPLAINING OVERALL SATISFACTION WITH SERVICE

		X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
X_1	CONTACT									
X_2	SYSTEM	.005								
X_3	TURNARND	.049	-.302†							
X_4	CNCTIME	.357†	-.118	.095						
X_5	STRATIME	.474†	-.295†	.465†	.433†					
X_6	CITPRINT	.296†	-.032	.117	.530†	.341†				
X_7	PRICE	.086	.070	.151§	.311†	.309†	.621†			
X_8	AMTLRDTC	.025	-.097	.006	.055	.044	.117	.039		
X_9	SATIS6	.036	.003	.060	.079	0.38	.120	-.049	.394†	
Mean		.531	.193	4.31	24.2	46.2	104	28.3	2.19	2.61
Standard Deviation		.501	.396	4.26	14.5	26.3	111	13.1	0.62	0.32

N = 145

$^{\dagger}p < .01$

$^{\S}p < .05$

Both CNCTIME and STRATIME are positively influenced by the personal contact with the client, but the effect of this on the number of citations printed is relayed almost solely through connect-time. The amount learned about the topic searched (AMTLRDTC) does not appear to be affected by any of the process variables. The small negative coefficient between it and SYSTEM, which might imply that SDC was less effective than LIS (as our search analyst fervently believes), is not statistically significant. Similarly, the positive coefficient from CITPRINT, which would imply more is learned from long bibliographies, is not statistically significant.

CITPRINT is a statistically significant determinant of PRICE as would be expected given the pricing policy in which charges for an "excessive" number of citations are made. Other variables which might affect price, such as being in one of the target groups receiving free searches, are excluded from the model but are represented by e_i.

Finally, five causal variables impact upon overall satisfaction (SATIS6) but only two of these relationships are statistically significant: those for AMTLRDTC and PRICE. The first has a positive effect, with those clients who learned more about their topic having a more positive viewpoint. But, controlling for CITPRINT, AMTLRDTC, SYSTEM, and TURNARND, those who paid a higher price were less satisfied overall. That is, all other things being equal, the client who paid a higher rate would report lower overall satisfaction than one who paid a lower rate. Thus, though price did not appear as an important variable in the zero-order correlations, it does appear as a determinant in the final analysis. Of the remaining variables which we thought might affect overall satisfaction, namely TURNARND, SYSTEM, and CITPRINT, a possible relationship is indicated only for the last. Taking the three branches from CITPRINT together, it might be suggested that it does affect satisfaction, with its positive effects being felt both directly and indirectly via the path through amount learned, and its negative effects felt via the path through price.

Table 31 lists the path coefficients for the process models in which not only overall satisfaction is the dependent variable of interest, but also the subscales measure specific characteristics of the search service, SATIS1, through SATIS5. In the table, paths are named with the effect variable first and the causal variable second. The subscripts also reflect this ordering, e.g., p_{41} is the coefficient measuring the effect of X_1 (CONTACT) on X_4 (CNCTIME). An exception to this rule occurs when the correlations remain unanalyzed, as between the pairs of exogenous variables X_1 to X_3. For these variables, the zero-order correlation coefficients are presented.

Means, standard deviations, and sample sizes are also given in Table 31. Sample sizes vary according to the satisfaction subscale being considered since not all clients were exposed to all facets of the service, and hence did not respond to some evaluation questions.

Path coefficients for the first 11 paths for the five satisfaction subscales are, in fact, estimates of the same path coefficients already considered in the diagram explaining overall satisfaction. Any variation from earlier estimates is due to variation in the samples on which the estimates are based. In fact, the new estimates are quite similar to the earlier ones, except for the sample size of 31 on which estimates for path coefficients leading to SATIS3 are based. This is to be expected given the small sample size, and serves as a warning against placing too much confidence in estimates drawn from this subsample.

The last five coefficients in each column of Table 31 do present new path coefficients which measure the effects of SYSTEM, TURNARND, CITPRINT, PRICE, and AMTLRDTC on the satisfaction subscales.

Starting with SATIS1, the degree of satisfaction with publicity materials and directions, we note than only PRICE seems to have an effect, and, as before, the effect is negative. A similar conclusion holds for SATIS2, the convenience of the service and helpfulness of its staff.

CITPRINT, PRICE, and AMTLRDTC all have significant effects on the satisfaction of the 31 clients who responded

TABLE 31

PATH COEFFICIENTS FOR PROCESS MODEL EXPLAINING SUBSCALE SCORES FOR SATISFACTION WITH SERVICE

	Path	Statistic	Variable					
			SATIS1	SATIS2	SATIS3	SATIS4	SATIS5	SATIS6
1.	CONTACT-SYSTEM	r_{12}	.03	-.01	-.23	.16	.06	.00
2.	CONTACT-TURNARND	r_{13}	.00	.03	.19	-.19	-.06	.05
3.	SYSTEM-TURNARND	r_{23}	$-.27^{\dagger}$	$-.29^{\dagger}$	.01	$-.32^{\dagger}$	$-.34^{\dagger}$	$-.30^{\dagger}$
4.	CNCTIME-CONTACT	p_{41}	$.29^{\S}$	$.32^{\dagger}$	.28	.20	$.34^{\dagger}$	$.36^{\dagger}$
5.	STRATIME-CONTACT	p_{51}	$.39^{\dagger}$	$.41^{\dagger}$	.21	$.34^{\dagger}$	$.40^{\dagger}$	$.47^{\dagger}$
6.	CITPRINT-CNCTIME	p_{64}	$.47^{\dagger}$	$.46^{\dagger}$	$.44^{\S}$	$.62^{\dagger}$	$.56^{\dagger}$	$.47^{\dagger}$
7.	CITPRINT-STRATIME	p_{65}	.15	.14	.21	-.04	.03	.14
8.	PRICE-CITPRINT	p_{76}	$.66^{\dagger}$	$.61^{\dagger}$	.29	$.57^{\dagger}$	$.50^{\dagger}$	$.62^{\dagger}$
9.	AMTLRDTC-SYSTEM	p_{82}	-.13	-.11	-.33	-.04	-.14	-.10
10.	AMTLRDTC-STRATIME	p_{85}	-.06	-.01	-.04	-.08	-.03	-.03
11.	AMTLRDTC-CITPRINT	p_{86}	.15	.15	.02	.01	.05	.14
12.	SATIS-SYSTEM	p_{92}	.04	.04	.21	$.32^{\S}$	-.05	.09
13.	SATIS-TURNARND	p_{93}	.03	.05	.08	$.26^{\S}$	.09	.09
14.	SATIS-CITPRINT	p_{96}	-.13	.14	$.41^{\S}$	-.01	.03	.18
15.	SATIS-PRICE	p_{97}	$-.24^{\S}$	$-.22^{\S}$	$-.39^{\S}$	-.11	-.06	-.20
16.	SATIS-AMTLRDTC	p_{98}	-.08	.09	$.43^{\dagger}$	.11	$.67^{\dagger}$	$.38^{\dagger}$
	n		148	157	31	70	139	145
	$\bar{X}$		2.60	2.75	2.40	2.59	2.32	2.61
	s		.42	.42	.45	.37	.67	.32

$^{\dagger}p < .01$

$^{\S}p < .05$

to SATIS3 which measured the timeliness of the service, including document delivery from EDRS and EISO. These coefficients are similar to those noted for overall satisfaction, but are somewhat longer.

In contrast to the preceding case, only TURNARND, and SYSTEM apparently affect SATIS4, which tapped client satisfaction with the quality of the technology, as measured by the length of the bibliography, readability of microfiche, and availability of microfiche readers.

Satisfaction with the value of the bibliography and materials located (SATIS5) was apparently affected by only one variable, the amount learned about the topic. It is notable that, for this specific attitude object -- the value of the bibliography and materials located through it -- the negative effect that price had on other types of satisfaction disappears.

Discussion

How successful is the process model at explaining user satisfaction? We are embarrassed to admit, having put considerable effort into its development and testing, that it is only slightly more effective than the input model at doing the job for which it was intended. Fortunately, it does provide additional information that increases its overall usefulness.

As far as satisfaction is concerned, only one variable seems to have a consistent effect, namely price. The negative effect of price on satisfaction was apparent with overall satisfaction, and satisfaction with particular components of the service: publicity materials and directions, convenience and helpfulness, and timeliness. It did not affect satisfaction with the technology or materials produced. In interpreting this differential effect of price, it must be recalled that 9% of all users received free searches, and most others paid $30 or more. It would appear, then, that when individuals are paying for a bibliographic search, they expect more in the way of service than they would if they were receiving it for free. Yet, it is important to note that their expectations with regard to service do not carry over to their assessment of the value of the goods, which they apparently assess independently of amount paid.

We are at a loss to account for the three other significant relationships between process variables and satisfaction scores (SYSTEM and TURNARND with SATIS4, quality of technology; and CITPRINT with SATIS3, timeliness of service). We are inclined to ascribe them to anomalies in the smaller samples involved, or to extraneous variables not in the analysis.

There is, of course, another variable which is related to various satisfaction scores with some consistency, the amount learned about the topic searched (AMTLRDTC). This variable is an output variable in its own right, but intervenes between satisfaction and all process variables except price. It is positively related to overall satisfaction, satisfaction with timeliness of service, and most important, satisfaction with the value of the bibliography and materials. This last relationship helps to validate the satisfaction items, since one would expect a person who learns more than another from a bibliography to be more satisfied with it. But more important, it highlights the idea that the client is motivated to learn, and that if this learning does not occur, dissatisfaction will result.

Though the amount learned has proven to be an important intervening variable explaining client satisfaction, none of the process variables helps to account for the extent of learning that takes place. This failure to account for variation in learning is an important finding in and of itself, since the following possible causes are ruled out: the system used, the number of citations printed, and the interview/strategy time. It would appear that explanations must be sought in the personality or knowledge of the client, the interaction between the client and search analyst, the quality of the search strategy, or the topic being searched.

Relationships for the remainder of the process model have been confirmed. Price is affected by the number of citations printed; the number of citations printed is affected by connect-time -- but not interview/strategy time; and both connect-time and interview/strategy time are affected by the method of contact. If there is a surprise here, it is that while the personal contact is responsible for taking a considerable amount of the search analyst's time, the production of longer bibliographies and higher prices, it seems to bear no relationship to either the amount learned or the level of satisfaction.

Implications

There are two findings in this study which seem of immediate import to the search service manager, and one with implications for future research. All three are products of the process model.

First, it is apparent that any search service which charges for its product must emphasize the *service* as well as the search output. It is not enough to provide customers with a bibliography and materials, but it must be done in a way that makes the client realize he is paying as much for the service as for the product, and that he is getting his money's worth. Indeed it can be argued that clients only pay for the service, since what is paid is related not to the ultimate worth of the material, but to the cost of its retrieval.

Second the finding that process variables have no clear relationship to user satisfaction or the amount a user learns, suggests that, where necessary, economies may be possible by discouraging face-to-face interviews (which take more time) and by restricting the length of bibliographies as much as possible. These recommendations, if imposed on a staff, would probably fail (we speak from experience). But for search analysts who are responsible for their own budgets and who must defend their existence at least in part on the basis of the number of clients served, it may be encouraging to note that it is probably possible to cut a few corners without harming the quality of the service.

Finally, the need for future research into the determinants of the gain in knowledge experienced by users as a result of bibliographic searches is apparent, given its strong relationship with client satisfaction. While libraries and information centres have traditionally defined their roles as providers of information, with no guarantee that their clients benefit from this information, it appears that for search services to succeed in satisfying their client's needs, a better understanding of the personal and psychological factors involved is needed. In particular, if it is possible to establish in advance the likelihood of a search's success in filling a client's needs, then search analysts may be able to better distinguish between those clients who are likely to profit and those who are not. The failure of the input model involving sociological background variables to explain differing levels of satisfaction makes it clear that whatever the variables may be that explain this variation, they are to be found at the individual and not the group level.

Limitations

The suggestions above were presented without qualification, but it would be emphasized that they are made within the context of a single search service, EISO, serving a special population, the professional educational community in Ontario, Canada. Given the nature of its client group, EISO's staff primarily conducts in-depth, retrospective searches requested as a basis for research reports or background studies. The length of search interviews, connect-time, and the number of citations printed tend to exceed norms reported in the literature, but are not, we feel, out of line with the task (Wax, 1976, p. 13). Nevertheless, given EISO's norms, it may well be that it can cut corners without damaging the quality of service, whereas another service could not. Therefore, the conclusions and recommendations made here should not be considered as conclusions of general applicability.

Conclusion

The systems framework for evaluating an online bibliographic search service described in this chapter was successfully applied using separate analyses to determine the effects of input and process variables. In the first analysis, a number of background variables measuring the social characteristics of EISO's users were related to output variables measuring client satisfaction. The overall high level of satisfaction observed, combined with the lack of any significant relationships between the sociological input variables and client satisfaction, were interpreted as meaning that EISO was serving all categories of clients with equal effectiveness.

In the second analysis, a number of relationships among a number of process variables associated with the costs of operation and output variables measuring the clients' gain in knowledge and satisfaction. Strongest relationships were between process variables such as the number of citations printed and price, between price and satisfaction, and between the amount learned and satisfaction. The negative relationship between price and satisfaction, which did not apply to satisfaction with the bibliography and materials themselves, suggests that services which charge must be aware that clients are rating their service as well as their product. Future research is needed to discover variables that determine the amount a client learns from a search, since this information would give the search analyst a better understanding of when and how a search should be conducted.

CHAPTER 6

EISO TODAY: THE RESULT OF RESEARCH, DEVELOPMENT, DISSEMINATION, AND EVALUATION

When preliminary investigation into the creation of the Educational Information System for Ontario began in the early years of this decade the world of online bibliographic searching was in its infancy. Little documented evidence existed on the optimal methods of setting up a search service, numbers of users that might be expected to use it, or the costs incurred in providing it. The choice of data bases was limited and searching techniques relatively simple. Advances in the field have, however, taken place with sometimes startling rapidity and these changes combined with the findings of our own research have affected the development of EISO and how it is run today. The purposes of this chapter, therefore, are to present an overview of recent trends and developments in accessing data bases online and to document the changes that have occurred in the EISO service.

Trends and Developments in Online Searching

To state that significant changes have taken place over the past decade with respect to the production and use of computer-readable data bases is almost a truism. The constant flow of changes can be traced in the *Annual Review of Information Science and Technology*, journals such as *Special Libraries*, *College and Research Libraires*, *Canadian Library Journal*, *Journal of Library Automation*, *Journal of the American Society for Information Science*, *Online Review*. To keep up with the changing scene, the commercial data base firms have begun to issue regular newsletters and user manuals. Directories of available data bases have appeared and organizations associated with data base generation, processing, and use have sprung up. The developments and trends in data bases from 1966 through 1975 were documented in a recent paper by Martha Williams (1977). In that paper she notes the following changes.

Number and Size of Data Bases

In 1968, there were 20 data bases available to the public for information retrieval purposes. Today there are over 300. Ten years ago data bases consisted of a few thousand records. Now some data bases *add* as many as 400,000 source references *annually*.

Number of Searches and Users

In 1965, the people in the U.S. who used machine-readable data-base services numbered about 10,000. In 1975, there were 1,000,000 online retrospective searches performed in the U.S. and Canada excluding library automation applications such as OCLC.

Subject Coverage of Data Bases

Originally data bases were developed by government organizations (NASA, AEC, NLM), were mission-oriented, and contained scientific and technical information. Then abstracting and indexing services in science and technology began to develop data bases. They were followed by the "soft sciences," psychology, education, and social science. Now coverage is spreading to the area of human needs, consumerism, child care.

Retrospective Files

Because some data base organizations go back to 1966, retrospective search capabilities are expanding.

Types and Characteristics of Source Documents

Early data bases covered government reports, journal articles, and patent information, and tended to be largely bibliographic. There is now a trend toward numerical data bases, and ones that contain less permanent material, such as news-information, information about current research projects.

Funding Sources

There has developed a trend away from government-funding of mission-oriented data bases toward commercial organizations producing data bases specifically intended as searchable files.

Charging for Data Base Services

Early government-funded data bases were available free to government employees and contractors. There followed a period of subsidization of search centres with little or no fee passed on to the end user. This was followed by efforts of these centres to become self-supporting by charging for services. Now organizations are finding they can make a profit (SDC, LIS) and there is a growing information industry. This trend toward commercialism is a direct result of technological developments which have dramatically reduced the costs of data base searching. In 1965, it would have cost $1,000 to search a data base of 1,000,000 records. Today, it costs between $10 and $50.

Users and User Organizations

These have shifted from being primarily government and its contractors, to industry, then universities, and now public libraries. We now have third-party users or brokers of search services who sell the results of their online searching to their own customers. The end-user in such cases is the customer of an entrepreneurial intermediary.

Professional Organizations

Ten years ago there were no organizations devoted to computer-readable data bases. In the last ten years, ASIS has developed special interest groups on selective dissemination of information (SIG/SDI), and on user online interaction (SIG/UOI). In 1970 ASIDIC (Association of Information Dissemination Centers) and EUSIDIC (European Society of Information Dissemination Centers) were chartered. CAIS (Canadian Association for Information Science) was formed in this country.

Publications Devoted to Data Bases

Whereas ten years ago, little was published, today over 500 references a year dealing directly with data bases appear in the journal and report literature. In addition, the relevant organizations publish bulletins, newsletters, journals. These were followed by edited collections of papers, directories, and in the past five years monographs have begun to appear.

Terminology Development

It is startling to remember that in 1967, the term "data base" was hardly, if ever, used and that "online" was not known.

Standards

When data bases were used exclusively by the producing organizations, there was no need for standards. In the intervening years, as more organizations became involved in producing and processing tapes, the need for standardization became obvious. This area is still in its infancy.

File Design

Early data bases were not designed for searching but were production aides that came about as a byproduct of computerized composition for hardcopy publishing. Sophisticated techniques now allow one master file to generate multiple products, having differing formats and contents.

Online Search Software

It is hard to remember that ten years ago online retrieval was only a glint in the eye of a few information scientists. From rather limited versions of search systems, current software continues to incorporate features that can accomplish a variety of functions for the user.

Vocabulary for Data Base Searching

The trend is away from the use of highly structured, highly controlled vocabularies for searching data bases and towards free-text, natural language searching of titles, key works, key-word phrases, and abstracts.

Networking

Perhaps the most important trend in the data base area has been spurred by the development of huge, retrospective files which are too large to be supported by use within a limited geographical area; the vast increase in the numbers and kinds of data bases and the availability of online search services; the numbers of data base users; the cooperation made possible by the need for standardization; and technological developments in telecommunications. The development of such commercial communications networks as TYMNET, Telenet, etc., have in turn permitted the shared online use of search systems at SDC, Lockheed, NLM, Informatics, Mead, SUNY, OCLS, etc.

While much progress has taken place and many pitfalls have been avoided, several problem areas still remain largely unresolved or in the research phase. Copyrights, data rights, patents, export tariffs for data bases and software are largely unexplored. Document availability still poses some difficulties. The development of a common command language for accessing multiple online systems all with different command words and/or sequence of operations is still in an experimental stage. Problems of choosing between many data bases that vary considerably with respect to subject coverage, source types, file format, record format, indexing, vocabulary, etc., remain while investigation of problems concerned with the man/machine interface is just beginning.

The EISO Experience

Experience with EISO confirms and emphasizes the points brought out in the literature regarding the rapidity of change. The following developments are some of those that have occurred only within the last year and that have affected the type of service provided.

Availability of Data Bases

In the last year alone the following data bases have become available, *Language and Language Behavior Abstracts* (LLBA), *Library and Information Science Abstracts* (LISA), *Canadian Business Periodicals Index*, *Canadian Newspaper Index*, and *Sociological Abstracts*. On the drawing board and about to be launched by Lockheed are *NICEM*, and *National Council for Child Abuse and Neglect*, among seven others.

Reloading of Data Bases

New searching capabilities are constantly being introduced. The most potentially important one is the ability to search for words or phrases in titles or abstracts rather than only by descriptors.

Changing Search Rules

An example is the shift from being able to search the classification codes in *Psychological Abstracts* by using four digits to using only two.

Changing Print Formats

Lockheed now offers six different format options, SDC even more.

Coverage Decisions

The most obvious is the broader coverage in *RIE* that offers dissertations and ONTERIS that continues to expand into the areas of curriculum guidelines, and CODE materials.

Communication Networks

Originally using one number with Tymshare, EISO now uses two networks (Tymshare and Telenet), and two systems (SDC and Lockheed), plus ONTERIS, involving a total of five different logons.

Data Base Features

New features include cited reference capability of *Social Sciences Citation Intex* (SSCI), and numerical subject codes in *Psychological Abstracts*.

Changes in Costs and Charging

These include introductions of discounts by SDC and Lockheed that are prorated according to usage; the reduction of communication costs and data base charges; and the elimination of flat fees and the substitution of rates reflecting actual costs incurred.

Increasing Refinements to the Search Process

One of the more concrete ways to grasp what this involves is to examine the tables of contents of Lockheed's *Brief Guide to Dialog Searching* and SDC's *Informart Search Service* (Appendices E and F), both from the user manuals that number hundreds of pages.

These changes have, of course, profoundly affected the type of service that EISO is able to offer its users. For example, when the service began in March 1975, only one data base (ERIC) was searched and only one system (SDC) used to access that file. Now several systems including SDC, Lockheed, ONTERIS, and The New York Times are used to provide access to a variety of data bases in education and the closely related social sciences.

The service has expanded its provision of original documents by supplying users with a choice of the following formats: microfiche copies of fiche documents, paper copies of journal articles, and paper copies of microfiche documents. The first two of these options are supplied directly by EISO staff, the last through an arrangement with MicroMedia, a local commercial company (see Appendix G).

Pricing policies have been substantially changed also. Initially, as a result of data collected during a short trial period, a flat fee of $30 was charged per search. Then, as it became possible to obtain exact computer costs incurred by each search on the printout and as it became clear that there was little link between time spent on a search by the search analyst (within the limits set by EISO) and the satisfaction of the user, the decision was taken to introduce a sliding price structure. Now the user is charged for direct computer conncect-time costs, number of citations printed, and a flat rate for the search analyst's time to the nearest quarter-hour. These costs associated with connect-time and citations vary with the system accessed and data base used. This new pricing structure has the advantage of imposing economic discipline on the search analyst without reducing the quality of the search.

Publicity efforts have also been somewhat modified as a result of research and practice. It was found that articles and advertisements in professional journals went virtually unheeded and did not serve as an effective stimulant for users. Far more effective were the brochures (Appendix H) sent to school boards. Direct mailing to all schools in the province was tried but found to be excessively costly for the number of users generated. The current methods of publicizing the service consist of twice yearly (Fall and Winter) mailings of 12,000 brochures to school boards, faculties of education, professional associations, etc.; fliers distributed at Summer and Fall OISE student registrations (Appendix I); inclusion of sessions about EISO in graduate courses 1010: Research Methods in Educational Administration, 1021: Retrieval of Knowledge in Education, and 2050: Dissemination and Utilization of Knowledge in Education. In addition, high visibility is maintained by attendance at conferences, orientation tours for visiting educators, and the packaging of bibliographies and original documents in covers with the distinctive EISO logo (Appendix J).

With the start of Phase IV of the EISO project in April 1978, the main thrust of the Ministry of Education contract became the provision of the online bibliographic retrieval service. Collection of research data was sharply curtailed and all data collection instruments were revised to reflect the shift in emphasis from research project to service monitoring. New Search Request Forms (Appendix K), EISO Service Evaluation Data Sheets (Appendix L), and EISO User Evaluation Questionnaires (Appendix M) are designed to provide information on who uses the service, the purpose for which they use it, their degree of satisfaction with it, and the cost of providing it. Items referring to other types of information have been eliminated.

The role of the Education Information Consultant or EIC, the intermediary between geographically remote users and the centrally located information resources, that began in 1975 is continuing though in a modified format. Detailed case studies of the four part-time linkers (Auster, 1978) showed that these individuals were indeed performing a useful function as perceived by their users. Their greatest contributions tended to be in the early stages of the search process in making the potential user aware of the service and helping him to define and clarify his problem or information need. The roles that developed were found to differ significantly in their configurations with the functions performed, time spent, numbers of users varying markedly from EIC to EIC. One of the unexpected outcomes of the linkage program was the springing up of voluntary or self-selected EICs who had heard about the service and felt that it could be useful to their organization. These volunteers have become repeat users of the EISO service and have generated numerous searches over the past three years.

The roles of EISO's staff members have also undergone changes. The job of the library assistant who performs the clerical duties of the project has expanded with the introduction of alternative duplication formats, individually-tailoring billing systems, and regular publicity mailings. Record keeping, office management, and questionnaire coding round out a busy routine. The project manager's functions have so far not been as severely curtailed as was anticipated at the beginning of EISO's Phase IV. While it was thought that the reduction of data collection and analysis would reduce the time needed to carry out this role, the fact that the role had been a shared one for the first three years of the project was largely overlooked. It appears that with the responsibilities for research, project monitoring, and publicity shifting to one individual, the time allotment for that role is closer to the 30-40% range than to the 10% actually allotted to it.

The greatest change, however, has been in the role of the search analyst. Her role has become far more complex as a result of the technological trends and developments described earlier. With more systems and data bases at her disposal, she must constantly update her skills and the list of skills regarded as necessary has become increasingly lengthy. One expert (Martin, 1974) feels that the analyst must be knowledgeable about query formulation and result manipulation. The former includes familiarity with suffix removal, search field control, dictionary access, spelling variations, related term capability, word proximity operators, Boolean operators, request sets, phrase decomposition, search profiles, and sequential searching. The latter includes familiarity with search review, predefined formats, online formatting, rapid scan, expanding, sorting, ranking, microfiche, statistical interface, offline printing, and data access protection.

Another expert (Wanger, 1977) presents her view of the skills required in chart form[1]

TABLE 32

SKILLS REQUIRED TO ACCESS MULTIPLE DATA BASES

		Skills/Knowledge Base			
		Reference & Information Education	Data Base Knowledge	System Skills	"That Special Skill"
OFFLINE	1. ANALYZE THE INFORMATION PROBLEM	X	x	--	x
	2. SELECT DATABASE(S)	X	X	x	x
	3. SELECT TERMS	x	X	x	x
	4. CONCEPTUALIZE INPUT TO SYSTEM	x	x	X	x
ONLINE	5. EVALUATE PRELIMINARY RESULTS	x	x	x	x
	6. CYCLE THRU 1-5, AS NEEDED	x	x	x	x
OFF LINE	7. MAKE FINAL PRINTING DECISIONS	x	x	x	x
	8. EVALUATE FINAL RESULTS	x	x	x	x

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[1] Wanger, Judith. "Multiple Data Base Use." *Online*, 1977 1(4), 35-41.

She recognizes, however, that the search process is a dynamic one relying heavily on human factors which cannot easily or completely be captured on paper. To underline the importance of that extra dimension, she introduces "that special skill" which may encompass

> . . . the ability to relate to people, to listen, to read (and hear) between the lines, to make some fairly abstract connections, to feel confident about entering another person's world of interest and expertise, and to begin relating a search problem to the world of information (p. 35).

Needless to say, the errors that can be made by the unsuspecting novice in such a sophisticated professional area are almost limitless. Ironically, however, the major learning opportunity for currently practicing search analysts has until recently been primarily on-the-job trial and error augmented by professional development workshops held by the commercial data base brokers at conferences.

Conclusion

When the EISO project started, the whole field of online bibliographic retrieval was relatively new and undeveloped. Few guidelines or criteria existed for the establishment and ongoing operation of such services, costs were as yet undetermined, and user acceptance was still problematic. Within a very short time, technological advances made possible the provision of a wide selection of data bases, costs became more readily determinable, and online access became the accepted way of searching a substantial portion of the social science literature. There can be little doubt that online services will continue to develop and expand to meet the information needs of growing numbers of users in the future.

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APPENDIX A

EISO USER EVALUATION QUESTIONNAIRE 1

Educational
Information
System
for Ontario

EISO Search Analyst
OISE Library, S218
252 Bloor Street West
Toronto, Ontario M5S 1V6
(416) 923-6641 Ext. 487

User Evaluation Questionnaire

Dear EISO User:

According to our records, you conducted a search through the Educational Information System for Ontario (EISO) during the last two months or so. As you know, this is an experimental service, and is part of a research project aimed at learning more about the information needs of Ontario educators, and how these needs can be met.

Could we impose upon you to complete the evaluation questionnaire and return it to us in the enclosed self-addressed and stamped envelope. The questionnaire should take no more than a few minutes to complete. All data will be held in strict confidence and used only for research purposes.

Many thanks for your cooperation.

Sincerely,

Ethel Auster, Stephen B. Lawton
Principal Investigators

P.S. If you requested the search on behalf of another user, please pass this questionnaire on to the individual concerned for completion.

EISO User Evaluation Questionnaire

The data collected from the user evaluation questionnaire will be used only for research purposes. To identify and attract potentially interested users to EISO we must know who is now using the service; we must also identify and improve weak areas in the search service.

Please read each question carefully and indicate your response with a check mark: ☑

Search No. ______ ___
(1)

Topic ______________________________

____

If you have completed a previous evaluation questionnaire, please start at item 24 on page 7.

Personal Data

7,8 1. Age
(1) ☐ 25 or under
(2) ☐ 26 - 35
(3) ☐ 36 - 45
(4) ☐ 46 - 55
(5) ☐ 56 - 65
(6) ☐ over 65

2. Highest earned degree
(1) ☐ Bachelor's
(2) ☐ Master's
(3) ☐ Doctorate
(4) ☐ other certificate

9-10 3. Please indicate your primary professional role or function. (Check one only)
(01) ☐ Administration or Supervision
(02) ☐ Teaching
(03) ☐ Pupil Personnel Services
(04) ☐ Research
(05) ☐ Field Development
(06) ☐ Ministry Regional Office
(07) ☐ Library Services
(08) ☐ Private Consultant
(09) ☐ Undergraduate Student
(10) ☐ M.Ed. Student
(11) ☐ Ed.D. Student
(12) ☐ M.A. Student
(13) ☐ Ph.D. Student
(14) ☐ Other: ____________________

11 4. How many years have you been in your current position?
(1) ☐ less than one year
(2) ☐ 1 year
(3) ☐ 2 years
(4) ☐ 3 years
(5) ☐ 4 to 6 years
(6) ☐ 7 to 9 years
(7) ☐ 10 or more years

12,13 **5. Have you ever been an officer of a professional organization?**
(1) ☐ Yes (2) ☐ No

6. Are you a member of any professional organization *other* than those required by provincial legislation?
(1) ☐ Yes (2) ☐ No

14,15 **7. Have you written any professional papers for publication or for presentation at conferences in the last five years?**
(1) ☐ Yes (2) ☐ No

8. Have you participated in an educational research project in the last five years?
(1) ☐ Yes (2) ☐ No

16 **9. Are you now studying or planning to study toward an academic degree?**
(1) ☐ Yes (2) ☐ Not sure (3) ☐ No

Organizational Characteristics

17,18 **10. If you are with a school board, please indicate the level of your primary professional position. Otherwise, check "Not applicable".**
(1) ☐ Elementary grades only
(2) ☐ Secondary grades only
(3) ☐ Elementary and secondary
(4) ☐ Central board office
(5) ☐ Other: ______________________
(6) ☐ Not applicable

11. What is the mother tongue of the majority of individuals served by your organization?
(1) ☐ English
(2) ☐ French
(3) ☐ Other: ______________________

4

Information Needs

12. Please indicate (A) the amount of time per week you normally spend in obtaining information from each of the sources listed below, and (B) how valuable the information gained from each source is to you.

	Source	(A) Approximate Time Spent (hrs. per week)	(B) Value			
			Low	Medium	High	NA
19,20	a. Human resources	________	☐	☐	☐	☐
21,22	b. Office files, reports	________	☐	☐	☐	☐
23,24	c. Prof. organizations	________	☐	☐	☐	☐
25,26	d. Libraries and their holdings—journals, books, indexes, etc.	________	☐	☐	☐	☐
27,28	e. Conferences	________	☐	☐	☐	☐
29,30	f. Prof. Dev. Days	________	☐	☐	☐	☐
31,32	g. Academic, prof. courses	________	☐	☐	☐	☐
33,34	h. Curric. guides, texts	________	☐	☐	☐	☐
35,36	i. ERIC materials	________	☐	☐	☐	☐
37,38	j. Other: ________	________	☐	☐	☐	☐
			(1)	(2)	(3)	(4)

13. How often do you seek information for the following?

	Purpose	Frequency			
		Never	Sometimes	Often	Very often
39	a. To keep abreast in the field	☐	☐	☐	☐
40	b. Assignments, term papers, or theses	☐	☐	☐	☐
41	c. Preparing or updating bibliographies	☐	☐	☐	☐
42	d. Curriculum development	☐	☐	☐	☐
43	e. Program improvement	☐	☐	☐	☐
44	f. Preparation of speeches, reports, articles	☐	☐	☐	☐
45	g. Research and development projects	☐	☐	☐	☐
46	h. Browsing	☐	☐	☐	☐
47	i. Personnel recruitment or evaluation	☐	☐	☐	☐
48	j. Policy development	☐	☐	☐	☐
49	k. Other: ________	☐	☐	☐	☐
		(1)	(2)	(3)	(4)

EISO Search Information

80-81 14. How did you first learn about the Educational Information System for Ontario (EISO) and its services? (Check one only)

(01) ☐ Brochure or flyer
(02) ☐ Advertisement
(03) ☐ Prof. Dev. Day
(04) ☐ Classroom instruction
(05) ☐ Colleagues
(06) ☐ Ed. Information Consultant
(07) ☐ Library or Librarian
(08) ☐ EISO staff member
(09) ☐ Cannot recall
(10) ☐ Other:

82,83 15. Is a microfiche reader available in your organization?

(1) ☐ Yes
(2) ☐ Don't know
(3) ☐ No

16. Portable fiche reader?

(1) ☐ Yes
(2) ☐ Don't know
(3) ☐ No

Please indicate your satisfaction with the following elements of EISO. Feel free to comment in the space provided.

		Satisfaction		
		Low	Medium	High
84	17. Convenience of arrangements and adequacy of directions to obtain EISO searches. Comments:	☐	☐	☐
85	18. Accuracy and comprehensiveness of publicity materials. Comments:	☐	☐	☐
86	19. Adequacy of directions for ordering copies of materials listed in bibliography. Comments:	☐ (1)	☐ (2)	☐ (3)

57,58 20. Before using EISO, how helpful did you expect it to be?

(1) ☐ Not very helpful
(2) ☐ Somewhat helpful
(3) ☐ Very helpful

21. Would you recommend use of EISO to a colleague?

(1) ☐ Yes
(2) ☐ Perhaps
(3) ☐ No

59,60 22. Would you use EISO again?

(1) ☐ Yes
(2) ☐ Perhaps
(3) ☐ No

23. Do you think EISO search services be offered on a permanent basis?

(1) ☐ Yes
(2) ☐ Perhaps
(3) ☐ No

Those who have completed previous questionnaires, please start at this point.
Others, please continue.

61-62 24. Please indicate the professional role for which you requested this EISO bibliography. For example, if the bibliography was used to complete a course paper for your M.ED. you would check "M.Ed. student" although your primary professional role or function is in administration. (Check one only)

(01) ☐ Administration or Supervision
(02) ☐ Teaching
(03) ☐ Pupil Personnel Services
(04) ☐ Research
(05) ☐ Field Development
(06) ☐ Ministry Regional Office
(07) ☐ Library Services
(08) ☐ Private Consultant
(09) ☐ Undergraduate Student
(10) ☐ M.Ed. Student
(11) ☐ Ed.D. Student
(12) ☐ M.A. Student
(13) ☐ Ph.D. Student
(14) ☐ Other:

63,64 **25.** How much did you learn about your topic as a result of the search?

(1) ☐ Nothing or very little
(2) ☐ Some
(3) ☐ A great deal

26. How much did you learn about the Educational Information System for Ontario as a result of your search?

(1) ☐ Nothing or very little
(2) ☐ Some
(3) ☐ A great deal

65 **27.** How much additional information do you still desire concerning the topic that was searched?

(1) ☐ Nothing or very little
(2) ☐ Some
(3) ☐ A great deal

28. How helpful was the information provided as a result of your EISO search for each of the following activities?

	Helpfulness			
	Low	Medium	High	NA
66 a. Keeping abreast of the field	☐	☐	☐	☐
67 b. Completing assignments, theses, etc.	☐	☐	☐	☐
68 c. Preparing or updating a bibliography	☐	☐	☐	☐
69 d. Curriculum development	☐	☐	☐	☐
70 e. Improving programs	☐	☐	☐	☐
71 f. Preparing a speech, article or report	☐	☐	☐	☐
72 g. Undertaking or completing a research or development project	☐	☐	☐	☐
73 h. Browsing	☐	☐	☐	☐
74 i. Recruiting and/or evaluating personnel	☐	☐	☐	☐
75 j. Developing policy	☐	☐	☐	☐
76 k. Other: ____________________	☐	☐	☐	☐
	(1)	(2)	(3)	(4)

Search No. └┴┴┴┴┘ └┴┘
(1)

7 **29.** For how many of the references on your printout did you read the original material?

(1) ☐ 0-5
(2) ☐ 6-10
(3) ☐ 11-20
(4) ☐ 21 or more

Comments: ______________________________
____
____

8,9 **30.** How much of the relevant information retrieved was new to you?

(1) ☐ 0%
(2) ☐ 10-20%
(3) ☐ 21-50%
(4) ☐ more than 50%

31. How do you feel about the price of the search?

(1) ☐ Very reasonable
(2) ☐ Acceptable
(3) ☐ Excessive

Please indicate your satisfaction with the following elements of your EISO search. Feel free to comment in the space provided below.

		Satisfaction			
		Low	Medium	High	NA
10	**32.** Helpfulness of search analyst or Educational Information Consultant. Comments: ______________________________ ______________________________	☐	☐	☐	☐
11	**32.** Length of bibliography Comments: ______________________________ ______________________________	☐	☐	☐	☐
12	**33.** Readability of microfiche copies. Comments: ______________________________ ______________________________	☐	☐	☐	☐
		(1)	(2)	(3)	(4)

Please indicate your satisfaction with the following elements of your EISO search. Feel free to comment in the space provided below.

		Satisfaction			
		Low	Medium	High	NA
13	34. Time taken to deliver the EISO bibliography. Comments: ______________________ ______________________	☐	☐	☐	☐
14	36. Time taken to deliver microfiche or paper copies ordered from EISO. Comments: ______________________ ______________________	☐	☐	☐	☐
15	37. Time taken to deliver microfiche or paper copies ordered from EDRS. Comments: ______________________ ______________________	☐	☐	☐	☐
16	38. Value of bibliography itself. Comments: ______________________ ______________________	☐	☐	☐	☐
17	39. Value of materials located via EISO bibliography. Comments: ______________________ ______________________	☐	☐	☐	☐
18	40. Availability of microfiche readers. Comments: ______________________ ______________________	☐	☐	☐	☐
		(1)	(2)	(3)	(4)

41. Please comment on both the good and bad elements of your EISO search. Any suggestions you make towards improving the service are welcome.

Thank you for your time and cooperation.

Please return completed questionnaire to:

EISO Search Analyst
OISE Library, S218
252 Bloor Street West
Toronto, Ontario M5S 1V6

APPENDIX B

EISO SEARCH REQUEST FORM 1

EDUCATIONAL INFORMATION SYSTEM FOR ONTARIO

The Ontario Institute for Studies in Education
Room S218, 252 Bloor Street W., Toronto M5S 1V6
(416) 923-6641 Ext. 487

Search No. ____________

Topic: ____________

SEARCH REQUEST FORM

1. Name ____________

Address ____________

Phone ( ) ____________

2. Invoice: ( ) Same, or ____________

Phone ( ) ____________

3. Bibliography to: ____________

4. Search Topic: Year(s) to be searched – ________ Level or group – ________

Detailed description of topic –

5. Reasons for requesting search (Please specify how you hope to use the information) –

6. Number of references desired: ____________

7. Citations of relevant materials known to you, if any, or authors writing in the area.

8. Price: Free ☐ $20 ☐ $30 ☐

9. Contact: In person ☐ Telephone ☐ Mail ☐

10. Date request received __ D __ M __ Y __ Date of interview __ D __ M __ Y __

Length of interview ________ min.

11. Does the client have access to microfiche reader? Yes ☐ No ☐ Don't know ☐

EISO Reader? Yes ☐ No ☐ Don't Know ☐

12. Search Strategy –

13. Comments:

APPENDIX C

EISO SERVICE EVALUATION DATA SHEET 1

EDUCATIONAL INFORMATION SYSTEM FOR ONTARIO

Search No. ________

Topic ________________

____

____

EISO SERVICE EVALUATION DATA-SHEET

C
3

Search Request

42. Rc'd. ________ 7   43. Intvw. ________ 13   44. Run ________ 19

25-26 45. Purpose (01)___Keep abreast of field   (07)___Research/development report
(02)___Assignment, term paper, thesis   (08)___Browsing
(03)___Prep., update of bibliography   (09)___Personnel recruit, eval., sup.
(04)___Curriculum development   (10)___Policy development
(05)___Program improvement   (11)___Other: ________________
(06)___Prep. speech, article, report   ________________

27 46. Contact (1)___In person   (2)___Phone   (3)___Mail

47. Earliest yr. rq'd. ____ 28   48. No. ref. rq'd. ______ 30   49. Ref. exp. ______ 34

50. Cit. known ____ 38   51. Price ____ 40

42 52. Payment (1)___Cash or cheque   (2)___Invoice   (3)___Cost recovery

Charge for search

43 53. Who pays (1)___EISO (free)   (2)___Requestor   (3)___Organ.
(4)___Other ________________

54. OISE charge Unit ____ 44

Search

49 55. Intvw., strat. time ______min. 46   56. System (1)___SDC   (2)___Lockheed

50 57. Data base (1)___ERIC   (2)___Psych. Abs.   (3)___SSCI   (4)___ECEA
(5)___Diss. Abs.   (6)___ERIC + PA   (7)___ERIC + ECEA   (8)___ECEA + PA
(9)___Other: ________________

58. Connect time ______min. 51   59. Cit. Printed ______ 54   60. Cost/cit. ______ 58

EISO Evaluation Data-sheet (2)

61 61. Bib. sent (1)__Requestor (2)__Search Analyst (3)__EIC (4)__Other:____________

62. Date bib. rc'd. ________ 62 63. Cost/hr system ____ 68

Material Charge

71 64. Payment (1)___Cash or cheque (2)___Invoice

72 65. Who pays (1)__EISO (2)__Requestor (3)__Org. (4)__Other:________________

66. OISE Charge Unit ___ 73

C 4 Materials

67. N EISO fiche ordered ____ 7 68. N EISO art'cl ordered ____ 10

69. N EISO fiche orders filled by OISE ____ 13

70. N EISO fiche orders filled by other libraries ____ 16

71. N EISO fiche orders unfilled ____ 19

72. N EISO art'cl orders filled by OISE ____ 22

73. N EISO art'cl orders filled by other libraries ____ 25

74. N EISO art'cl orders unfilled ____ 28

31 75. EISO reader av'lbl (1)___Yes (2)___Don't know (3)___No

76. Price first search ___ 32

77. Please indicate the type of organization or institution with which user is primarily associated by placing a check (✓) in the appropriate space below.

34-35 (01)___preschool

(02)___public board

(03)___separate board

(04)___private school or board

(05)___CAAT

(06)___Faculty of Ed. or Teachers' College

(07)___University

(08)___Ministry of Education
(09)___Professional Organization
(10)___Government (Not Ministry of Education)
(11)___Business or Industry
(12)___OISE Director's Office/Assistant Director's Office
(13)___Finance
(14)___Computing Service
(15)___Publications
(16)___Library
(17)___R & D
(18)___Educational Administration
(19)___Applied Psychology
(20)___Adult Education
(21)___History & Philosophy
(22)___Computer Applications/Measurement & Evaluation
(23)___Curriculum/Modern Language Centre
(24)___Educational Planning
(25)___Special Education
(26)___Sociology in Education
(27)___Graduate Studies
(28)___Field Development
(29)___Other:______________________________

78. Is the organization located in

36-37
(01)___District or District Municipality
(02)___County or Regional Municipality
(03)___Metro Toronto
(04)___Ottawa
(05)___London
(06)___Hamilton
(07)___Windsor
(08)___Sudbury
(09)___Canada (outside Ontario)
(10)___Outside Canada

38,39
79. Is the organization located in the Northeastern Region (Region 3) of the Province of Ontario?

(1)___Yes (2)___No

80. What is the community the organization serves?

(1)___Mostly rural
(2)___Equally rural and urban
(3)___Mostly urban

181

40 81. Who designed the search request?

(1)___Search Analyst
(2)___OISE Field Centre EIC
(3)___Faculty of Education EIC
(4)___Ministry of Education EIC
(5)___CAAT EIC
(6)___Not sure
(7)___Other:______________________

41 82. Sex (1)___Male (2)___Female

APPENDIX D

INTERVIEW SCHEDULE

Educational Information System for Ontario*

Interview Schedule
(Revised 1977 09 19)

The interviews with EISO clients have two primary purposes:

1. to verify questionnaire data;
2. to probe more deeply than the questionnaires into:
   a) satisfaction of clients,
   b) utilization of information retrieved through EISO,
   c) effects of EISO use on:
      i) second users of the information
      ii) recommendations to others re use of service.

PART I: VERIFICATION OF QUESTIONNAIRE ITEMS

Interviewer : Tape following information first.

1. Search number and topic. (For multiple searches, refer to last search).

Name:________________________________Number______________

Topic:____

2. Address and phone:

Address:____

____

Postal Code:____________ Phone: Bus.__________Res.__________

3. Type of Organization with which primarily associated:

____

4. Role in which search requested:________________________

____

5. Could you tell me about the context for placing the search; e.g., the circumstances that prompted it.

---

*Funded under contract by the Ministry of Education, Ontario.

PART II: MAJOR TOPICS FOR IN-DEPTH PROBES

1. Satisfaction (old items 45, 46; new items 38, 39, 29, 30).

   a) On the evaluation questionnaire you reported a (low/medium/high) level of satisfaction with the value of the bibliography itself. Could you expand on this, explaining why you felt this way?

      Sample probes: Was the format satisfactory? Did you understand it? Were the citations relevant? Be specific--if not, why not? Did the search analyst understand the question properly? If not: evidence? Wrong terms used? Did you contact her again to let her know?

   b) You reported a (high/medium/low) level of satisfaction with the materials located via the bibliography. Could you explain how you came to this conclusion?

      Sample probes: What did you do about getting the materials--order them from EISO or go to the library? How much did you read? What did you judge them against (e.g. books, previous knowledge)?

   c) What suggestions do you have that might improve the quality of EISO services and product?

      Sample probes: More information on certain topics; books; curriculum guides; Canadian materials; etc.

2. Utilization of information retrieved (old item 32; new 28).

   a) Did you use the bibliography? If so, how? What was the final result (research report; new program; whatever)? Is a copy available (that we can have)? What contribution did the EISO search make to the overall project? to the "background research" phase?

   b) Did you encounter any problems in using it? If so, what kind were they? Did they relate to the service or to local circumstances? What would have helped you resolve this problem?

   c) What became of the bibliography? Is it in your files?

   d) Have you used the bibliography again for another purpose (e.g. class materials)? If so, is there a "product" available? Can we get a copy?

3. Secondary Uses

   a) Did you pass on the bibliography, or a copy of it, to anyone else? Who? (Be specific--so we can contact them.) Why? Did they give any feedback on it?

b) Did you recommend use of the EISO service to any colleagues? (old Item 50; new 21.) Who? Why? Did they give any feedback on it later?

c) Can you think of any other "secondary" effects of your use of EISO, or of the bibliography? For example, did you pass on copies of articles, etc.?

PART III: QUESTIONS RAISED IN REVIEW OF QUESTIONNAIRE - ESPECIALLY FOLLOW-UP OF COMMENTS (Type or write these in first.)

CLOSING:

Thank you very much for your time and interest. I can assure you that all the information is confidential; your name and position will not appear in any report. Finally, I'd like to leave with you a copy of the guide to EISO, Search Analyst's card, and several copies of our brochure.

APPENDIX E

A BRIEF GUIDE TO DIALOG SEARCHING: CONTENTS

A BRIEF GUIDE TO DIALOG* SEARCHING

LOCKHEED INFORMATION SYSTEMS
Palo Alto, California

September 1976

---

*Trademark Reg. U.S. Pat. & Trademark Office

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LOCKHEED DIALOG® RETRIEVAL SERVICE
PSYCHOLOGICAL ABSTRACTS

FILE DESCRIPTION

PSYCHOLOGICAL ABSTRACTS covers the world's literature in psychology and related disciplines in the behavioral sciences. Over 900 periodicals and 1500 books, technical reports, and monographs are scanned each year to provide coverage of original research, reviews, discussions, theory, conference reports, panel discussions, case studies, and descriptions of apparatus.

SUBJECT COVERAGE

The following general fields are covered:

- Applied Psychology
- Cognitive Processes
- Communication and Language
- Cultural and Social Influences and Behavior
- Developmental Psychology
- Educational Psychology
- Neurology and Physiology
- Perceptual and Motor Performance
- Personality
- Professionals in Psychology
- Psychometrics in Psychology
- Treatment and Prevention
- Physical and Psychological Disorders
- Animal Psychology

SOURCES

Each year the APA staff examines approximately 2,400 primary sources, both domestic and foreign, including the following:

- Periodicals
- Technical Reports
- Monographs
- Books

DIALOG FILE DATA

Inclusive Dates:	1967 to the present
Update Frequency:	Monthly (approximately 2,000 records each month)
File Size:	240,000 citations, as of September 1976

ORIGIN

PSYCHOLOGICAL ABSTRACTS is produced by:

American Psychological Association
1200 Seventeenth Stree, N.W.
Washington, D.C. 20036

Telephone:
202/833-7600

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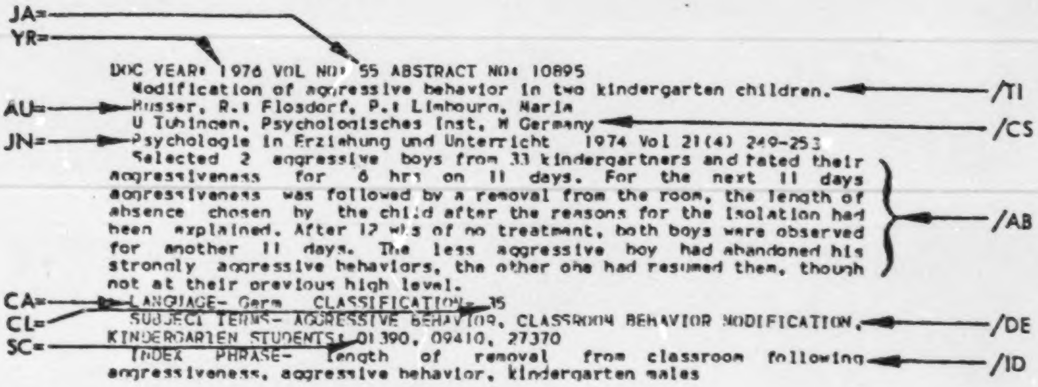
PSYCHOLOGICAL ABSTRACTS
DIALOG® FILE 11

SAMPLE RECORD


JA=
YR=
AU=
JN=
CA=
CL=
SC=
/TI
/CS
/AB
/DE
/ID

```
DOC YEAR: 1976 VOL NO: 55 ABSTRACT NO: 10895
  Modification of aggressive behavior in two kindergarten children.
  Husser, R.; Flosdorf, P.; Limbourg, Maria
  U Tubingen, Psychologisches Inst, W Germany
  Psychologie in Erziehung und Unterricht   1974 Vol 21(4) 249-253
  Selected 2 aggressive boys from 33 kindergartners and rated their
aggressiveness  for  6 hrs on 11 days. For the next 11 days
aggressiveness  was followed by a removal from the room, the length of
absence  chosen  by  the child after the reasons for the isolation had
been  explained. After 12 wks of no treatment, both boys were observed
for  another  11  days. The  less  aggressive  boy  had abandoned his
strongly  aggressive behaviors, the other one had resumed them, though
not at their previous high level.
  LANGUAGE- Germ   CLASSIFICATION- 35
  SUBJECT TERMS- AGGRESSIVE BEHAVIOR, CLASSROOM BEHAVIOR MODIFICATION,
KINDERGARTEN STUDENTS; 01390, 09410, 27370
  INDEX  PHRASE-  length  of  removal  from  classroom  following
aggressiveness, aggressive behavior, kindergarten males
```

RETRIEVAL METHODS

SUBJECT OR TEXT SEARCHING

SUFFIX	FIELD NAME	EXAMPLES
None	Basic Index (Title, Descriptor, Identifier, Corporate Source, Abstract)	E AGGRESSIVE S CHILD? S AGGRESSIVE(C)BEHAVIOR(W)MODIFICATION S TUBINGEN(F)GERMANY
/TI	Title	S KINDERGARTEN(W)CHILDREN/TI
/DE	Descriptor	S CLASSROOM(W)BEHAVIOR/DE
/ID	Identifier	S CLASSROOM(F)REMOVAL/ID
/CS	Corporate Source	S PSYCHOLOGISCHES(W)INST/CS
/AB	Abstract	S ISOLATION(F)TREATMENT/AB

CODE SEARCHING

PREFIX	FIELD NAME	EXAMPLES	
AU=	Author	EXPAND AU=Flosdorf	SELECT AU=Busser, R.
CL=	Classification Code	EXPAND CL=30	SELECT CL=35
CO=	CODEN[1]	EXPAND CO=PSY	SELECT CO=PSYC-A
JA=	Journal Announcement	EXPAND JA=5500	SELECT JA=5505
JN=	Journal Name	EXPAND JN=PSYCHO- LOGIE ERZIEHUNG	SELECT JN=PSYCHOLOGIE UND UNTERRICHT
LA=	Language	EXPAND LA=FRGN	SELECT LA=GERM
SC=	Subject Code	EXPAND SC=013	SELECT SC=01390
YR=	Year of Publication in PSYCH ABS	EXPAND YR=70	SELECT YR=76
UD=	Update	EXPAND UD=7600	SELECT UD=7605

[1] CODEN is expandable & selectable but is not displayed when citation is printed.

The LIMIT command is not applicable in File 11.

FORMATS AVAILABLE

Format 1	DIALOG Accession Numbers
Format 2	A Record without Abstract
Format 4	PA Citation and Abstract
Format 5	Complete Record
Format 6	PA Citation Number and Title
Format 7	PA Citation Number, Author, Title, Source Document Citation, and Abstract

SORTABILITY

Search results can be rearranged for offline printing by using the sorting capability in conjunction with the offline PRINT command. Sortable fields are Author and Title. Ascending order (A-Z) will be used unless descending (Z-A) is specified.

EXAMPLES: PRINT 4/51-94/AU/TI
PRINT 7/2/1-20/AU,D/TI,D

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APPENDIX F

ORBIT USER MANUAL CONTENTS

System
Development
Corporation

Infomart SEARCH SERVICE

ORBIT® USER MANUAL

APRIL 1975

Infomart
an information service of Southam Press Limited and Toronto Star Limited,
Suite 806, One Yonge Street, Toronto M5E 1E5

© COPYRIGHT 1975 BY SYSTEM DEVELOPMENT CORPORATION
TM-5511/000/00

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SDC SEARCH SERVICE
ORBIT® USER MANUAL
for
INFOMART/CBPI
(Canadian Business Periodicals Index)

NOVEMBER 1977

Infomart

Suite 806, One Yonge Street, Toronto, Ontario M5E 1E5 Tel. (416) 366-3904
2000 West 12th Avenue, Vancouver, B.C. V6J 2G2
85 Albert Street, Ottawa, Ontario K1P 6A4
Affiliate: MICROFOR inc., 914, avenue des Érables, Québec, Québec G1R 2M5

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ORDER FORMS

EISO

Educational Information
System for Ontario
OISE Library, S 216
252 Bloor Street West
Toronto M5S 1V6
(416) 923-6641 ext. 487

Order Form for Microfiche Copies of Documents

Instructions

1. Enter ED numbers in columns below
2. Complete address section at bottom left (search number is given at top right corner of pink copy of Search Request Form and also on first page of the printout of your bibliography)
3. Retain 3rd (pink) copy of Order Form for your records
4. Mail remaining copies to EISO
5. When we reply stating cost of order, send cheque or money order payable to EISO. The microfiche copies will then be sent to you.

ED Numbers	ED Numbers	ED Numbers

SHIP TO:

Name____________________

Address____________________

____

____

____

Phone (   )____________________

Date____________________

Search No.____________________

1) EISO

Order Form for Paper Copy of ERIC Documents
ED 000 001-
ED 065 734
from EDRS

ERIC Document Reproduction Service
P.O. Box 190, Arlington, VA 22210
Phone (703) 841-1212

SHIP TO:

Name ____________________

Address ____________________

____

Phone (   ) ____________________

SEND VIA:

☐ Parcel Post ☐ Air Mail

Date ____________________

ED Number	No. of Pages	Cost (office use only)
	Total	$
		$ Postage
		$ Total

Enclose payment in U.S. funds payable through U.S. bank or clearing house (e.g., bank draft)

1) EDRS

Educational Information
System for Ontario
OISE Library, S 218
252 Bloor Street West
Toronto M5S 1V6
(416) 923-6641 ext. 487

Order Form for Paper Copy of ERIC Documents
ED 065 735 and over from EISO

1

For each document desired, enter ED number and number of pages in first two columns on following page. Leave third column blank.

2

Complete address section of form (search number is given at top right corner of search request form and also on first page of printout).

3

Retain 5th (pink) copy of form for your records.

4

Mail remaining copies to EISO.

5

When you receive documents and invoice, send cheque or money order to EISO.

Instructions

Educational Information
System for Ontario
OISE Library, S 218
252 Bloor Street West
Toronto M5S 1V6
(416) 923-6641 ext. 487

Order Form for Paper Copy of ERIC Documents ED 065 735 and over from EISO

SHIP TO:

Name ______________________

Address ______________________

____

Phone (   ) ______________________

SEND VIA:

- ☐ Parcel Post
- ☐ First Class Mail
- ☐ Delivery Service

Date ______________________

ED Number	No. of Pages	Cost (office use only)
	Total	$
		$ Postage or Delivery
		$ Due EISO

EISO Search No. ______________________

Order No. ______________________
(office use only)

1) Requestor Invoice

Educational Information
System for Ontario
OISE Library, S 218
252 Bloor Street West
Toronto M5S 1V6
(416) 923-6641 ext. 487

Order Form for Photocopies of Journal Articles

Instructions

1

For each article desired, enter journal information on the grid on the following page. Samples below show where information required is listed on the printout of your bibliography and how it should be listed on the order form.

Sample Printout item:

EJ137100 TM502226
Creativity and Body Image Boundaries
Loshak, Lee J.; Reznikoff, Marvin Journal of Personality Assessment; 40; 1; 81-90 Feb 76
Descriptors: *Creativity/ *Body Image/ *Individual Characteristics/ *Creativity Tests/ Higher Education/ Males/ College Students
Studies creativity as it relates to body image, and examines the communality of several creativity measures. (RC)

Sample Order Form line:

Journal Name	Vol. No.	Issue No.	Page(s)	Date
Journal of Personality Assessment	40	1	81-90	Feb 76

SAMPLE

2

Complete address section of form on the following page (search number if given at top right corner of pink copy of Search Request Form and also on the first page of the printout of your bibliography).

3

Retain 3rd (pink) copy of Order Form for your records.

4

Mail remaining copies to EISO.

5

When we reply stating cost of order, send cheque or money order payable to EISO. The photocopies will then be sent to you.

Educational Information
System for Ontario
OISE Library, S 218
252 Bloor Street West
Toronto M5S 1V6
(416) 923-6641 ext. 487

Order Form for Photocopies of Journal Articles

Journal Name	Vol. No.	Issue No.	Page(s)	Date

1) EISO

SHIP TO:

Name____________________

Address____________________

____

____

____

Phone (   )____________________

Date____________________

Search No.____________________

APPENDIX H

EISO BROCHURE

EISO

Printed in Canada
December 1977

New Services
New Prices

Educational Information System for Ontario

EISO

EISO Search Analyst
OISE Library, S 218
252 Bloor Street West
Toronto, Ontario M5S 1V6

Educational Information System for Ontario*

Have you heard about EISO?
Chances are you face problems now where additional information would be of help. If so, the Educational Information System for Ontario (EISO) project is ready to assist by locating and duplicating materials contained in the collection of the Educational Resources Information Center (ERIC), and other data bases of interest to educators.

What is ERIC?
ERIC is an information gathering and disseminating network comprised of 16 subject-specialised clearinghouses operating under the auspices of the U.S. National Institute for Education. The clearinghouses collect, index and abstract research reports, conference papers, curriculum materials and handbooks, including many from Canadian sources, and announce them monthly in *Resources in Education (RIE)*. They also index more than 700 journals, including 26 from Canada, for the *Current Index to Journals in Education (CIJE)*. In all, the ERIC data base includes over 200,000 references, to which almost 2,500 new references are added each month.

How can EISO help?
By searching the ERIC data base for information on a particular problem or area of interest, you can learn how others have approached the issue. EISO provides direct access to ERIC, retrieving references quickly and inexpensively. Computerized searches of Dissertation Abstracts, Exceptional Child Education Abstracts, Psychological Abstracts, Social Sciences Citation Index and Sociological Abstracts are also available. The service will be of particular help to those working under the pressure of deadlines. For public addresses and research reports EISO will prove helpful; for planning and decision-making it may prove indispensable.

How does EISO work?
A search request is submitted to the search analyst, a specially trained reference librarian in the OISE Library, who rewords the content to conform to a list of subject headings designed for computer scanning of the data base. Via a computer terminal, the search analyst queries the data base. When combinations of subject headings are entered (e.g. remedial reading AND teacher aides), the number of relevant citations and sample citations are printed on-line. If the citations are appropriate, the complete set of references and abstracts are printed off-line and mailed to the requestor.

How long does a search take?
The computer search itself normally takes fifteen minutes, but follows a half-hour's discussion with the search analyst whenever possible. The bibliography usually arrives within ten working days of receipt of a search request.

How much does a search cost?
Depending on the complexity of the topic and length of bibliography, a search can cost as little as $10 or as much as $100. Clients are charged $12 per hour for the search analyst's time (to the nearest quarter hour), for computer connect time, and for citations printed. Costs for connect time and citations vary with the data base and computer system used. Contact the EISO search analyst for current rates and an estimate of the cost for searching your topic.

How do I obtain documents and articles?
EISO provides microfiche copies of all ERIC documents at a charge of 50¢ per fiche, and paper copies of those with ED numbers greater than ED 065 734 at a charge of 6¢ per page. Paper copies of documents with numbers between ED 000 001 and ED 065 734 inclusive are available from ERIC Document Reproduction Service (EDRS) in the United States. Paper copies of journal articles are available from EISO at a charge of 20¢ per page. Order forms for both documents and articles will be sent to clients with the EISO bibliography.

How do I request a search?
Write a letter describing the information you need and mail it to the address below; phone the search analyst at (416) 923-6641 ext. 487; or make an appointment with the search analyst at the EISO Search Service Office located in the OISE Library on the second floor of the OISE building.

Current awareness service
If you need regular updates on your search topic, ask the search analyst about EISO's new current awareness service. Charges will vary with the complexity of your search profile.

How can clients assist EISO?
Besides providing a useful service, EISO is also a research project looking into the information needs of Ontario's educators. It will be greatly appreciated if clients complete evaluation questionnaires or agree to be interviewed, if asked to do so.

---

*Project funded under contract with the Ontario Ministry of Education.

EISO Search Analyst
OISE Library, S218
252 Bloor Street West
Toronto, Ontario M5S 1V6

APPENDIX I

EISO POSTER AND FLYER

Time is money, the saying goes.

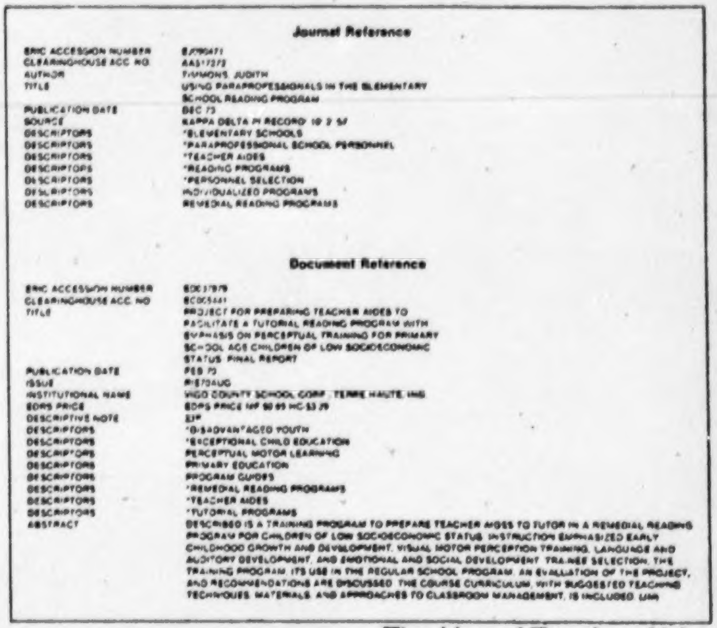
EISO

Consider, for instance, the time it takes to search through indexes like *Resources in Education* or *Psychological Abstracts* for all the references about the topic you are working on.

A computer can do that searching in less than one-tenth of the time it would take you to do it manually.

Is the 90% time saving worth $30 to you or to the organization sponsoring your work? If it is, contact:

EISO Search Analyst
OISE Library, S218
252 Bloor Street West
Toronto, Ontario M5S 1V6
Phone: (416) 923-6641 Ext. 487



```
                          Journal Reference

ERIC ACCESSION NUMBER     EJ090471
CLEARINGHOUSE ACC. NO.    AA517272
AUTHOR                    TIMMONS, JUDITH
TITLE                     USING PARAPROFESSIONALS IN THE ELEMENTARY
                          SCHOOL READING PROGRAM
PUBLICATION DATE          DEC 73
SOURCE                    KAPPA DELTA PI RECORD; 10, 2, 57
DESCRIPTORS               *ELEMENTARY SCHOOLS
DESCRIPTORS               *PARAPROFESSIONAL SCHOOL PERSONNEL
DESCRIPTORS               *TEACHER AIDES
DESCRIPTORS               *READING PROGRAMS
DESCRIPTORS               *PERSONNEL SELECTION
DESCRIPTORS               INDIVIDUALIZED PROGRAMS
DESCRIPTORS               REMEDIAL READING PROGRAMS


                          Document Reference

ERIC ACCESSION NUMBER     ED037979
CLEARINGHOUSE ACC. NO     EC005441
TITLE                     PROJECT FOR PREPARING TEACHER AIDES TO
                          FACILITATE A TUTORIAL READING PROGRAM WITH
                          EMPHASIS ON PERCEPTUAL TRAINING FOR PRIMARY
                          SCHOOL AGE CHILDREN OF LOW SOCIOECONOMIC
                          STATUS. FINAL REPORT
PUBLICATION DATE          FEB 70
ISSUE                     RIE70AUG
INSTITUTIONAL NAME        VIGO COUNTY SCHOOL CORP., TERRE HAUTE, IND
EDRS PRICE                EDRS PRICE MF $0.65 HC-$3.29
DESCRIPTIVE NOTE          37P
DESCRIPTORS               *DISADVANTAGED YOUTH
DESCRIPTORS               *EXCEPTIONAL CHILD EDUCATION
DESCRIPTORS               PERCEPTUAL MOTOR LEARNING
DESCRIPTORS               PRIMARY EDUCATION
DESCRIPTORS               PROGRAM GUIDES
DESCRIPTORS               *REMEDIAL READING PROGRAMS
DESCRIPTORS               *TEACHER AIDES
DESCRIPTORS               *TUTORIAL PROGRAMS
ABSTRACT                  DESCRIBED IS A TRAINING PROGRAM TO PREPARE TEACHER AIDES TO TUTOR IN A REMEDIAL READING
                          PROGRAM FOR CHILDREN OF LOW SOCIOECONOMIC STATUS. INSTRUCTION EMPHASIZED EARLY
                          CHILDHOOD GROWTH AND DEVELOPMENT, VISUAL MOTOR PERCEPTION TRAINING, LANGUAGE AND
                          AUDITORY DEVELOPMENT, AND EMOTIONAL AND SOCIAL DEVELOPMENT. TRAINEE SELECTION, THE
                          TRAINING PROGRAM, ITS USE IN THE REGULAR SCHOOL PROGRAM, AN EVALUATION OF THE PROJECT,
                          AND RECOMMENDATIONS ARE DISCUSSED. THE COURSE CURRICULUM, WITH SUGGESTED TEACHING
                          TECHNIQUES, MATERIALS, AND APPROACHES TO CLASSROOM MANAGEMENT, IS INCLUDED. (JM)
```

The Use of Teacher Aides in Remedial Reading
Partial Printout

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APPENDIX J

BIBLIOGRAPHY COVER

Educational
Information
System
for Ontario

EISO Search Analyst
OISE Library, S218
252 Bloor Street West
Toronto, Ontario M5S 1V6
(416) 923-6641 Ext.487

Bibliography

APPENDIX K

EISO SEARCH REQUEST FORM 2

EDUCATIONAL INFORMATION SYSTEM FOR ONTARIO

The Ontario Institute for Studies in Education
Room S218, 252 Bloor St. W., Toronto M5S 1V6
(416) 923-6641 Ext. 487

Search No. ___

Topic: ___

SEARCH REQUEST FORM

1. Name ___ Invoice: ( ) Same, or

2. Address ___

Phone(s) ( ) ___

( ) ___

Phone ( ) ___

3. ☐ Phone when printout arrives
☐ Mail printout without phoning

4. Detailed description of topic

5. Reasons for requesting search (Please specify how you hope to use the information)

6. Citations of relevant materials known to you, if any, or authors writing in the area

7. Data Base(s): ☐ ERIC ☐ Psych. Abs. ☐ SSCI ☐ ECEA
☐ Diss. Abs. ☐ ERIC + PA ☐ ERIC + ECEA ☐ ECEA + PA
☐ Other: ___

8. Comments:

APPENDIX L

EISO SERVICE EVALUATION DATA SHEET 2

EDUCATIONAL INFORMATION SYSTEM FOR ONTARIO

EISO Service Evaluation Data-Sheet

Search No. ________

Topic: ______________________________

1. Date (day, month, year): ___ ___ ___

2. Purpose:

(01)___Keep abreast of field
(02)___Assignment, term paper, thesis
(03)___Prep., update of biblio.
(04)___Curriculum development
(05)___Program improvement
(06)___Prep. speech, article, report
(07)___Research/development report
(08)___Browsing
(09)___Personnel recruit, eval., sup.
(10)___Policy development
(11)___Other: ______________________
____

3. Contact: (1)___Walk-in (2)___Phone (3)___Letter (4)___Other: ________

4. Payment: (1)___Free (2)___Cash, cheque, invoice (3)___OISE chargeback

5. Interview, strategy time ____ min.

6. Requester's organization:

(1)___School board
(2)___CAAT
(3)___Faculty of Education
(4)___OISE
(5)___Ministry of Education
(6)___Other: ____________________

7. Please indicate your primary professional role or function. (Check one only)

(01)___Administration or supervision
(02)___Teaching
(03)___Pupil Personnel Services
(04)___Research
(05)___Field Development
(06)___Ministry Regional Office
(07)___Library Services
(08)___Private Consultant
(09)___Undergraduate Student
(10)___M.Ed. Student
(11)___Ed.D. Student
(12)___M.A. Student
(13)___Ph.D. Student
(14)___Other: ____________________
____

8. Organization location:

(1)___Metro Toronto
(2)___Hamilton, London, Ottawa, Windsor, Sudbury
(3)___District or District Municipality, County or Regional Municipality
(4)___Canada (outside Ontario)
(5)___Outside Canada

9. Sex: (1)___Male (2)___Female

APPENDIX M

EISO USER EVALUATION QUESTIONNAIRE 2

EISO
Educational Information System for Ontario
OISE Library, S218
252 Bloor Street West
Toronto, Ontario M5S 1V6

Search No. ______
Topic: ______

EISO User Evaluation Questionnaire

The data collected from the user evaluation questionnaire will be used to improve the search service, and will be treated in a confidential manner.

Please read each question carefully and indicate your response with a check mark: ✓. Leave blank if the item is not applicable.

	Satisfaction		
	Low	Medium	High
1. Convenience of arrangements to obtain EISO searches.			
2. Helpfulness of search analyst or Educational Information Consultant.			
3. Time taken to deliver the EISO bibliography.			
4. Time taken to deliver microfiche or paper copies ordered from EISO.			
5. Value of bibliography itself.			
6. Value of materials located via EISO bibliography.			
7. Price of the search and bibliography.			
	(1)	(2)	(3)

8. How much of the relevant information retrieved was new to you?

(1) ______0% (2) ______1-20% (3) ______21-50% (4) ______more than 50%

9. For how many of the references on your printout did you read the original material?

(1) ______None (2) ______1-5 (3) ______6-10 (4) ______11-20 (5) ______21 or more

10. How did you first learn about the Educational Information System for Ontario (EISO) and its services? (Check one only.)

(1) ______Brochure or flyer
(2) ______Advertisement
(3) ______Prof. Dev. Day
(4) ______Colleagues
(6) ______Library or Librarian
(7) ______EISO staff member
(8) ______Cannot recall
(9) ______Other: ______

11. On the reverse side, please comment on both the good and bad elements of your EISO search. Any suggestions you make towards improving the service are welcome.

THANK YOU FOR YOUR TIME AND COOPERATION

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